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JULY–AUGUST 1948

THE BULLETIN OF THE

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

VOLUME 5

NUMBER 4

A Note from your Editor

In this issue your editorial staff is bringing you five of the many outstanding papers presented at the recent Institute on Hospital Pharmacy. In order to do this we have had to omit several of the sections usually carried each month in our publication. However, after reading the papers we are certain you will approve of this plan. We know that it is impossible for the majority of the members to attend the institute and we want you to have the opportunity to read some of the very valuable material presented.

This is the second issue of THE BULLETIN which has been prepared at the offices of The American Pharmaceutical Association by Associate Editor Gloria Niemeyer, who is also the Assistant Director of the Division of Hospital Pharmacy. We know you will agree that she has done an excellent job.

This service to the Society which the American Pharmaceutical Association has authorized her to carry out is, indeed, appreciated by your editor. It is a great relief to have the copy sent complete for final proofreading and transmittal to the printers. It represents a great change from former days not so long ago when all the myriad of details had to be attended to with insufficient time.

The copy for this issue left Washington by plane Sunday and was delivered in Ann Arbor Monday morning. And on this Tuesday afternoon before the convention opens, it is about ready to be taken to the printers so that the completed publication can be placed in envelopes and mailed to you on August 13th by our capable assistant editor Albert Picchioni. He has volunteered to do this service for the Society to help counteract the high costs of getting out our publication.

Each copy of THE BULLETIN now costs the Society exactly 50 cents to mail to you. This is equal to your present membership fee of $3.00 per year. Unfortunately, for those who plan the budget we have, according to the records of August 1, 232 members who have not yet paid their 1948 dues. Because of rising costs, and in fairness to other members, we now have no choice but to remove from our mailing list the names of those who have not paid their 1948 dues. This will be done before the next issue is mailed. The Society must operate on a very small budget and to continue its present activities it is dependent on the active cooperation of its entire membership.

Cordially,

Don E. Francke

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AS *The President* SEES IT

In this issue of THE BULLETIN, I would like to present some of our fellow hospital pharmacists. Their activities and responsibilities may be a bit more unusual than the average, or the institution they serve has demanded attention and development of their department in a special manner.

****

Boston's John B. Murphy at the Massachusetts General Hospital has a managerial responsibility that is above the average in hospital pharmacy. His department with a personnel of 25 or more employees includes inpatient and outpatient units which taken by themselves easily dwarf the volume of work done in some of our largest hospitals.

When I investigated a report that this department manufactured tons of ointments, my visit did not prove to the contrary, although John is the first to de-emphasize any special distinction attached to it. The use of technicians under pharmacist supervision is highly developed and since a good amount of material ready for the dispensing phase is on a small production run basis it relieves the pharmacists for tasks more suitable for their training. Associated with the Pharmacy is a machine shop that tools special gadgets of John's own design. They are ingenious for hospital pharmacy and need to be publicized within our own publications for their value to others, if someone can convince him that they are more than "nothing," which he maintains. John is another individual who believes in personal assay of doubtful products.

Last winter we met again on New York's Wall Street at a War Assets disposal sale. At this meeting where all the large Eastern University Medical and Pharmacy schools had purchasing agents representing them, John by far exceeded the quantities bid for by the rest of us, giving us a small inkling of the demands of his units.

In a short time, John's department will be established in a new and specially planned Pharmacy wing with an outpatient department in another building that is redesigned to more modern needs. If this short dissertation engenders curiosity of John's department, I shan't be forgiven by him for pointing in his direction unless I explain that visitors at the moment will be lost in the throes of moving and rearranging these large units.

****

Directly antithetical to John's institutional size, is the hospital in West Chester, Pennsylvania where John Robert Cathcart is chief pharmacist. In a hospital of 100 beds, Bob has a personnel of three--exemplifying most convincingly that hospitals that size can justify at least one pharmacist.

Sterile solutions manufacture (bulk volume fluids) have been developed under Pharmacy supervision in this smaller hospital. In some instances, commercially available equipment of the standard type for hospitals has been redesigned to fit this particular operation.

To emphasize what can be done by the pharmacist, Bob has photographed this phase of his work in colored motion pictures which were shown at this year's Institute.

****

Down in balmy (breezes) Miami, Mrs. Anna Thiel is the chief pharmacist at the Jackson Memorial Hospital. Mrs. Thiel is a hospital pharmacist who does not limit her interests to our specialty alone but is active in all state pharmaceutical circles. She holds or has held offices in the Florida Pharmaceutical Association and is active in planning their annual meetings. She participates in affairs of civic organizations of Miami. With this association not the least of her contributions have been her radio talks on hospital pharmacy.

****

In Cleveland, Mrs. Evlyn Gray Scott has been a pioneer for hospital pharmacy - its laws, operations, standards and teaching programs.

Among her contributions, an outstanding piece of work has been in the direction of hospital pharmacy internships, particularly for women. She has

developed methods of supervision and control for pharmacists under an internship program that studies details that many similar programs overlook. Her methods are a judicious blend of theory and practically making her one of the few real teachers in the field.

St. Luke's Hospital in suburban Shaker Heights is an institution of approximately 500 beds and with Mrs. Scott's guidance has a Pharmacy unit that combines teaching with service in such a manner that the latter is never impaired. Not a small achievement is Mrs. Scott's opinions on therapeutics in her hospital where for any encroachment a chief of staff or intern is taken to task and a rational armamentarium seldom breaks down.

****

In Jackson, Michigan the Foote Memorial Hospital for years called on a local retail pharmacy to send a pharmacist in every afternoon for several hours to fill prescriptions. The "Drug Room" was an out-of-the-way cubicle with little to identify it but a heterogeneous array of bottles and cartons.

Miss Dorothy Tobin accepted the position as a full time pharmacist on the basis of the challenge it presented in this small hospital in 1942. Having completed an internship in hospital pharmacy in a large institution, she accepted the position since it demanded a new approach in that she had to develop the department without even the basic necessities.

Within the course of a year, the Pharmacy took on a new appearance with all pharmaceuticals catalogued and stored in neat, compact units done in white. Local cabinet makers developed a series of cabinets on the order of Schwartz units following Miss Tobin's design. (The hospital could not justify the commercial units.) A perpetual inventory and new accounting control was developed. The services of the Pharmacy were increased to a point that Miss Tobin needed an assistant. A new respect for hospital pharmacy by physicians and retail pharmacists was developed through her work in the community.

****

One institution where superlatives are not without foundation in describing it, is the New York Hospital where Don Clarke serves as apothecary-in-chief. This beautifully designed, modern skyscraper type of structure covers two city blocks. It rises in a series of terraced roofs (some of which boast of tennis courts) some 15 or more stories above 63rd Street and East River. One need only to describe the building or walk along its endless corridors to gain a rough approximation of the responsibility the pharmacist-in-charge has.

One naturally supposes the Pharmacy would not be a small unit; but it could be typical of some large institutions where ward baskets line the floors, the pharmacists scurry back and forth for bottles and general confusion prevails. However, Don Clarke has redesigned his department to eliminate all this with all activities departmentalized. Each cubicle has a specific task, each painted in a light grey tone, with equipment so positioned that it contributes to efficiency. The volume of his outpatient section, of manufacturing, and of the sterile injectibles made, provides his pharmacy interns with experience on no less than a mammoth scale.

Interestingly enough, one might suppose that the hospital pharmacist once having developed such a department would rest on past laurels. However, Don Clarke is actively engaged in research in the Pharmacology Department of the affiliated Cornell University Medical School. His contributions to hospital pharmacy literature could easily comprise a text on the specialty.

It is always an experience to look forward to when I have the opportunity to visit Don for advice on some aspect of the inclusive rate plan, his operation being one of the few exemplary ones which most closely approximates the problems we encounter at our institution. (Secretly it is a subtle way to wrangle a dinner invitation from him in order that we can sit in the 14th floor dining room somewhat distracted by the excellent view of New York City and distant Manhattan skyscrapers.)

****

I have written about a handful of hospital pharmacists who in my estimation typify the progressive individual in our field. As can be seen each renders a service unknowingly by conducting his or her own bailiwick in the spirit of modern hospital pharmacy. Whether the pharmacy is in a small or large hospital, these pharmacists explore the potential to its ultimate possibilities.

One could fill an issue of THE BULLETIN by covering interesting sidelights of others such as Flack in Philadelphia, Wells in California, Reamer at Duke University, Phillips at Michigan, Sister Etheldreda in Brooklyn, Coffield in Atlanta, Vance in Birmingham, et al. However, before Editor Francke blue pencils my copy unmercifully, I will limit my notes for this issue by simply suggesting that if the opportunity arises to visit the departments mentioned you shall not leave without a practical idea or two or having your ambitions piqued.

Cordially,

J. Zugich

THE BULLETIN is published bimonthly by the American Society of Hospital Pharmacists, a national organization devoted to the profession of hospital pharmacy, dedicated to the interests of the hospital pharmacist, and pledged to cooperate with the American Pharmaceutical Association with which it is affiliated.

Contributions of articles by hospital pharmacists, or by others interested in the progress of this important branch of the public health profession, will be accepted if they are of general interest to those in hospital pharmacy. The editors reserve the right to revise all material submitted, if necessary.

The American Society of Hospital Pharmacists and the American Pharmaceutical Association assume no responsibility for the statements and opinions advanced by contributors to THE BULLETIN. Views expressed in the editorials are those of the editor and do not necessarily represent the official position of the American Society of Hospital Pharmacists.

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JULY - AUGUST 1948

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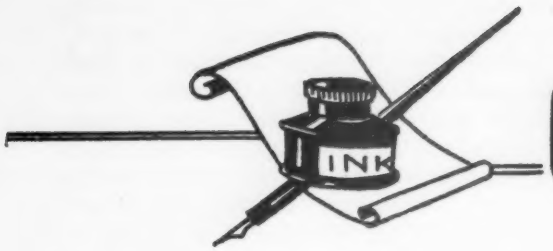


CORRESPONDENCE

Dear Sir: I was very agreeably surprised to receive last week a copy of the March-April issue of THE BULLETIN. Will you, as Editor, accept my sincere thanks for this publication, which provides an excellent insight into hospital pharmacy in the States.

The advance news of new remedies, such as Procaine Penicillin and Teropterin, is very interesting, and so is your editorial dealing with the U.S. Hospital Survey and Construction Act, and its application to pharmacy.

As you know, hospitals in Britain are to be taken over by the Ministry of Health on July 5th, but at present we have little information as to how the National Health Service Act will effect pharmaceutical departments.

E. C. White

Derbyshire Hospital for Sick Children
Derby, England

Dear Sirs: Enclosed you will find $3.00 for annual dues. This is one of the things I take pleasure in paying, for I read THE BULLETIN from cover to cover. Keep up the good work.

Richard F. Brant

Winter Veterans Hospital
Topeka, Kansas

Dear Sirs: Please find enclosed check for my dues for 1948.

I am the only member of my sex in Oregon so I am going after some of the boys here in Portland to become members.

I sure enjoy THE BULLETIN and wish to state at this time you are doing a fine job. You sure cover the new drugs in excellent form.

I am a director of the Oregon State Pharmaceutical Association as they wanted some hospital pharmacist to be represented.

Charles S. Harlocker

Good Samaritan Hospital
Portland, Oregon

Dear Sirs: I am enclosing a check for $3.00 in payment for the annual dues of the Society.

Allow me to take this opportunity to suggest to the Society to adopt an official automobile license plate which will enable the pharmacist to be identified as such in many emergencies. If the Society does not have such an emblem may I also suggest that the Society's Certificate, (the White Cross on a green background), would make an ideal model.

Accept my best wishes for your continued success.

Andrew F. Musiello

The Mount Vernon Hospital
Mount Vernon, New York

Dear Sirs: It's a pleasure to remit, not one year's dues, but, two years, to a grand organization that has accomplished so much in such a short time. Enclosed find check for $6.00 to cover dues for 1948 and 1949. Bulletin information and other information sent by the Society, has enabled me to secure needed additional room and improvements, and eventually more personnel. When improvements are completed, this institution will have one of the finest pharmacy departments in the City Administration.

Armand J. Dellande

City Infirmary Hospital
St. Louis, Missouri

Dear Sirs: I am enclosing the minutes of the last two meetings of The Society of Hospital Pharmacists of Greater Cincinnati. The minutes do not express the real pleasure we are receiving from attending the meetings and touring the pharmacies of the local hospitals...

We were pleased to receive from Mr. Godley the report of the Executive Committee approving our Society as an affiliate of the National Society.

Elizabeth Lynch

The Society of Hospital
Pharmacists of Greater
Cincinnati

EDITORIAL

NOW IS THE TIME FOR ACTION

The Hospital Survey and Construction Act places in the hands of hospital pharmacists the authority and responsibility to aid in planning facilities for adequate pharmacy service in the new hospitals to be constructed under the Act. For those of us in the specialty of hospital pharmacy who now have the opportunity to plan for the advancement of pharmacy service, it is at least gross negligence if we allow this time to pass without action. If we do not take definite action soon, we shall find that the hospitals will be completed without the aid of our planning and, in all probability, will perpetuate the errors of the past in the pharmacy departments of the future.

By June of this year, 340 new hospitals were approved for construction. Fortunately for us, these hospitals were mainly small ones--between 50 and 60 beds--located in rural areas. But now that the fulfillment of priority for the smaller hospitals has been almost completed, approval is about to be given for larger hospitals of 100 beds and over. Adequate pharmacy service should be provided for these hospitals. Even within the last few months, approval has been given for the construction of several of these larger hospitals. Before the end of the year the process of approving the larger hospitals will continue and accelerate.

Are we to stand by passively while hundreds of new hospitals are constructed without positive recommendations from us as to the need, the justification, the size, the equipment, the personnel and the other factors which influence pharmacy service in hospitals? Are we to allow this important social change to silently flow over us, being only half conscious of its significance to our future? Do we have nothing constructive to bring to those responsible for the planning of pharmacies in hospitals? If we don't act now we have no reason to later blame others for inadequate provision for pharmacy service in hospitals.

When offering our assistance, we must remember that planning under the Act is initiated at the community level. The need for a hospital arises in a community. Assisting the communities are the designated State Agencies which, with the help of the State Advisory Hospital Council, coordinate the requests of the various communities which need hospital facilities, priority being given where the need is greatest. In turn, the Surgeon General of the United States Public Health Service with his advisory bodies, the Federal Hospital Council and the Advisory Committee to this Council, directs the program along the broad principles laid down in the Act.

At the recent Institute on Hospital Pharmacy, Dr. J. R. McGibony, Assistant Chief of the Division of Hospital Facilities, United States Public Health Service succinctly summarized the needs of the State Agencies and of the Division of Hospital Facilities for the assistance of hospital pharmacists in planning for better pharmacy service. He has invited our cooperation.

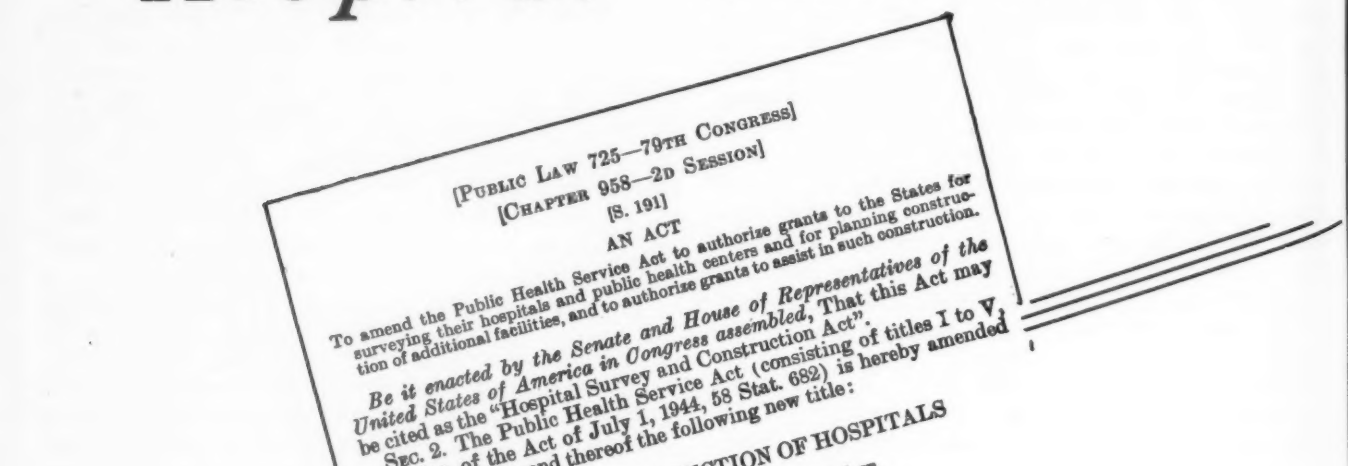
This is not only a challenge which should be met by the Society, working through the Division of Hospital Pharmacy, but it is also a challenge to the affiliated chapters of the Society. For it is the affiliated chapters which can work closely with the various state agencies to effect better pharmacy service in the hospitals planned in the individual states. There is too much to be done in a short time for any one agency to be expected to handle the entire burden.

Responsible officials of affiliated chapters should take these steps to initiate cooperation with the state and federal agencies.

1. Write to the Official Stage Agency designated to administer the Hospital Survey and Construction Act. The name and address of the administrative official is given on page 154 of this issue.
2. Offer the assistance of the affiliated chapter in planning and advising on the pharmacies for the hospitals approved for construction in the state.
3. Request a list of hospitals which have been approved for construction together with the name of the official in charge so that, if possible, consultation may be given on a community level.
4. Appoint a working committee which will accept the responsibility for the work to be done.
5. Send a copy of the recommendations of the working committee to the Division of Hospital Pharmacy for (1) transmittal to the U.S. Public Health Service which in turn may use the material to advise other state agencies, hospital architects and other officials, (2) publication in THE BULLETIN or through some other medium to disseminate the information to other affiliated chapters, hospitals, state agencies and other groups.

DON E. FRANCKE, *Editor*

Expansion of Hospital Facilities*



[PUBLIC LAW 725—79TH CONGRESS]
[CHAPTER 958—2D SESSION]
[S. 191]
AN ACT

To amend the Public Health Service Act to authorize grants to the States for surveying their hospitals and public health centers and for planning construction of additional facilities, and to authorize grants to assist in such construction.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Hospital Survey and Construction Act".

SEC. 2. The Public Health Service Act (consisting of titles I to V, inclusive, of the Act of July 1, 1944, 58 Stat. 682) is hereby amended by adding at the end thereof the following new title:

"TITLE VI—CONSTRUCTION OF HOSPITALS

"PART A—DECLARATION OF PURPOSE

"SEC. 601. The purpose of this title is to assist the
"(a) to inventory their existing hospit
tion 631 (e)), to survey the need fo
and to develop programs fo
nonprofit hospitals as w
afford the necessa

By J. R. Mc Gibony

The challenge of increased, improved hospital services is a challenge to what, with alternate spasms of pride and shame, we call "Our Civilization." It is as much a challenge to economics as it is to health. Most diseases are personal afflictions and domestic disasters, but they are also economic mistakes and community losses. Premature deaths and enfeebled lives alike rob the state, for the greatest asset of the state is its citizens, and the value of that citizenry is directly proportionate to its intellectual, moral, and physical vigor.

The cost of illness and premature death in the United States is in excess of ten billion dollars annually, including combined costs of health services and medical care, loss of wages from disability and potential earnings.

On an average day there are four million or more persons disabled by illness. Every year 70 million sick persons lose over one billion days from work or customary activities. Such fragmentary but specific estimates are indicative of the economic loss resulting from sickness and premature death, but they give no adequate indication of the incalculable social consequences of ill health.

We are not unmindful of the brilliant advances which have been made in scientific knowledge. Nor do we overlook notable improvements in medical, public health, professional education, research, and all aspects of hospital planning and services. We do not underestimate the contributions of individuals and associations, lay and

*Speech presented by J. R. McGibony, Senior Surgeon, Assistant Chief of the Division of Hospital Facilities, Public Health Service, at the Institute on Hospital Pharmacy, June 28, 1948, Princeton, New Jersey.

professional, in raising the standards of professional services. All of these advances are written large on the credit side of the ledger of national progress and they count heavily in the measure of our national resources.

Each year finds the hospital filling a place of increasing importance in the maintenance of the nation's health. At one time, only the person near death went to the hospital; today, the sick go there to receive care and to be cured; today the well persons will seek the hospital for the prevention of illness and disability. The technology of modern health service requires increasing use of the clinic and out-patient department. The facilities must be adequate for the bed patient, the ambulatory sick person, the patient in the early stages of disease, and the person in need of preventive care.

The increasing importance of the hospital in our national health services is the result of a variety of factors. In urban centers, home care of the sick is increasingly difficult in the crowded dwellings of the majority of the population. In rural areas, physicians can increase their efficiency and effectiveness tremendously if a hospital is available to furnish diagnostic and consultation facilities. Here the hospital serves a larger purpose than the treatment of its inpatients who constitute a small fraction of all the sick; it becomes the center for the health services of the community and influences the quality of care in the doctor's office and in the patient's home.

Furthermore, the pattern of illness is changing as the proportion of older persons in the population increases. The illnesses of adult life--cancer, diabetes, heart and circulatory diseases, kidney diseases--are not nearly as susceptible to the mass methods of environmental control; they require attention to the individual through the services of physician, dentist, pharmacist, nurse, and technician. With the increase in complexity of diagnostic and therapeutic procedures, care can often be given best in a hospital where modern facilities for diagnosis and treatment which the private physician cannot maintain for himself, are available.

Although the hospital facilities of some communities--especially of some large cities--may exceed the current effective demand for service, existing institutions are grossly inadequate to meet the needs of the population in many parts of the country. Such inadequacies are especially important and severe in rural and economically underprivileged areas. Enlargement of hospital facilities is needed in many areas; construction of new institutions is required in many regions where none have been built. Without such institutions, well-equipped and well-staffed, many of the important services which twentieth century medicine offers to the public are impossible of attainment. (1)

Professional standards of adequacy have indicated a need for general hospital facilities in the ratio of approximately 4.5 beds per 1,000 population; nervous and mental hospital facilities in the ratio of 5 beds per 1,000 population; 2 beds per 1,000 for chronic diseases; and for tuberculosis, $2\frac{1}{2}$ beds for each annual death from the disease. In addition, a public health center for each 20 to 30 thousand of the population appears to be needed.

The nation now falls woefully short of such standards. Knowledge of this fact was the motivating force on the part of those leaders in the hospital, health, and legislative fields whose vision conceived the broad phases of a national hospital program which culminated in the passage of the Hill-Burton Act as Public Law 725.

The philosophy of Public Law 725 is neither that of the long-haired "do-gooder," nor of the pork barrel politician. It is a combination of the unselfish benevolence of altruism and the simple economic facts of self-protection and preservation of the American way of life. With this as a point of departure there has been an almost amazing unanimity of opinion and purpose on the part of hospital and health authorities, of Congressional leaders, and the many progressive national organizations.

The American Hospital Association has taken an active and vital part in practically every phase of the development of the program. Under its present brilliant leadership it is constantly alert to matters affecting hospitals of the nation.

While I will not elaborate upon the details of the law, a thumbnail sketch may be of interest to some.

Purpose

The purpose of Public Law 725, The Hospital Survey and Construction Act, is to assist the States in providing "the necessary physical facilities for furnishing adequate hospital, clinic and similar services to all the people."

History -

This law was introduced as the Hill-Burton Bill, a bipartisan movement originating in the minds of leaders in the hospital and health field prior to 1940. In 1942 the American Hospital Association passed a resolution recommending Federal as-

sistance to hospitals. With practically no opposition and with the very active endorsement and support by the American Hospital Association, the Catholic Hospital Association, Protestant Hospital Association, American Medical Association, organized farm, labor and other national groups, action culminated in the introduction of the Hill-Burton Bill and its passage as Public Law 725 and approved by the President on August 13, 1946.

Scope

The program will assist the 53 States and Territories in providing the 900,000 additional hospital beds which are needed to provide adequate hospital services in addition to approximately 4300 health centers. In scope, the program is in spirit and in fact not a Federal but a State program, and in its final analysis, a community program.

Provisions for Financial Responsibility

Public Law 725 authorized $3,000,000 for allotment to States on a population basis for the purpose of inventory and survey of existing facilities and the development of a program designed to fill these needs. Also authorized is an appropriation of $75,000,000 annually for five years to assist in the actual construction and equipment of health facilities. This construction allotment is based on population and per capita income. All funds must be matched with two dollars locally for each Federal dollar.

Payment of Federal funds is made by the Secretary of the Treasury upon certification by the Surgeon General that a payment is due. Such payments are on a reimbursable basis and may be made at such times as the State Agency designates. Funds are paid by the Treasury to the State Agencies, which in turn pass them on to the applicant. In States having no legal authority to make payment to non-governmental groups, the Secretary of the Treasury may make payment directly to the applicant with the knowledge and consent of the State Agency.

Administration -

The Surgeon General of the United States Public Health Service, with advice and guidance from a Federal Hospital Council, is responsible for Federal direction of the program. The law requires that members of the Federal Hospital Council be representatives of specialists in the hospital and health field, as well as from consumer groups. Regulations outlining Federal requirements, including minimum construction and equipment standards, have been issued. Federal requirements include assurances of financial ability to construct and to maintain and operate the institution, non-discrimination assurances, and certain procedures in connection with the construction contract.

There is required an officially designated State Agency to be responsible for the program in each State. This agency must also have an advisory hospital council and has the complete responsibility for State participation in the program. This responsibility includes survey and inventory of existing facilities, development of a program showing needs, establishment of priorities for use of Federal funds in helping to meet those needs, and the establishment of minimum standards for maintenance and operation of facilities.

Eligibility of Facilities -

Eligible for participation in the program are general, tuberculosis, mental, chronic disease hospitals, and health centers. They must be non-profit and meet a limited number of minimum requirements of the law. Priority must be given for facilities for rural and low economic areas.

Status of Hospital Survey and Planning Program as of June 15, 1948 -

All 53 States and Territories have submitted information indicating their desire to participate in the program. Forty-eight have submitted Hospital Construction Plans which have been approved by the Surgeon General.

At least 9 States--Alabama, Alaska, California, Illinois, Mississippi, New York, North Carolina, Virginia, and Utah--have enacted legislation authorizing State funds for allotment to communities for use in matching Federal money for construction.

Need - Summary of Hospital Bed and Health Center Need

An analysis of the State Plans show a need for a total of approximately 1,800,000 hospital beds distributed among the four categories as follows: General - 652,000, mental - 700,000, tuberculosis - 156,000, and chronic disease - 276,000. Of the total indicated need, roughly 50% are already

available in existing hospitals meeting acceptable standards. This would leave a need for the construction of about 900,000 hospital beds of all categories.

In addition, while the picture has not been clarified, there appears to be a need for more than 4,000 health centers.

As of June 18, 1948, 340 construction projects have been approved; of these, 249 were general hospitals. Since one of the requirements of Public Law 725 is that priority be given to rural and low economic areas, of necessity the majority of projects approved at this time are small, the average size being between 50 and 60 beds.

This presents a problem which we and the various State agencies will need your assistance in overcoming. Pharmaceutical service in the average small hospital in the past has been decidedly unsatisfactory. Perhaps it may be too much to expect that such a hospital would be able to utilize the full time service of a competent pharmacist, even if the profession were numerically large enough to supply personnel. The Division will welcome any suggestions which you may have as to how the pharmaceutical services necessary to adequate patient care can best be supplied in these institutions.

Beyond this immediate aspect of the law requiring priority for the rural area follows the need for the larger hospitals. As facilities are supplied to rural areas, the tend of the program no doubt will be more marked in the direction of the larger institutions.

Today there are approximately 6,000 hospitals in the United States. Of this number, 1200 are under 25 beds; 1000 are from 25 to 50 beds; it can probably be safely assumed that there are few full time pharmacists on duty in these institutions. There are 1346 hospitals of 50 - 100 beds, in which the incidence of full time pharmacists is probably not a great deal higher. Of the remaining hospitals in this country, approximately 1000 are between 100 and 200 beds; 440 from 200 to 300 beds, and 840 over 300 beds.

In 1946, the American Medical Association reported a total of 2,786 full time pharmacists and 514 part-time pharmacists on duty in hospitals.

These figures would indicate a need for education in hospitals if the full benefits of the profession of pharmacy are to be made available as necessary to the development of a higher standard of patient care. What such an educational program will contain and what it may be able to accomplish rests largely in the hands of those members of your profession with vision, interest, and ability. I would like to assure you of the continued interest of the Public Health Service and of the Division of Hospital Facilities of our desire to cooperate fully in such matters as you deem worthy of undertakging.

Thus, you will see that the present program, as outlined, leaves much to be accomplished. Government can only do so much, and rightly so. The hospital program has one of its greatest virtues in being not a Federal, but a State program, in its final analysis a community program. Because of this, the responsibility is in large part yours for the success of the undertaking in your State and in your community. You are among the ones who know hospitals and are aware of problems in your area. Your interest, ability, and vision will determine, in large measure, the future contributions which hospitals will make to the welfare of the nation.

How you as individual hospital pharmacists may participate in this program has been ably and concisely editorialized by Don Francke and Herbert Flack in the Bulletin of the American Society of Hospital Pharmacists. You, as pharmacists, are painfully aware of the results of hasty and ill-informed planning of the pharmacy department. If the pharmacy is relegated to the basement, or to other locations which are not readily accessible to the nursing services and the outpatient department; if the rooms are cramped, or do not allow for probable expansion; if these mistakes are made, as they have been all too often, your department will not be able to perform its functions with proper efficiency. You, who are most familiar with the problems involved, are best qualified to recommend what facilities you will require to serve the needs of the individual hospital. It is always more difficult to correct a mistake than to avoid one, particularly when the mistake becomes embalmed in steel and concrete.

In the Division of Hospital Facilities we have attempted to maintain a balanced program in giving full consideration to all factors necessary to the ultimate goal of the individual hospital. This goal is the same as that envisioned by Congress in its deliberations prior to passage of the Hospital Act, and that is--better patient care.

To attain this end, it is necessary that the role of the pharmacy be given the importance it deserves. In this respect, the minimum requirements for pharmacies in the various types of hospitals were outlined, necessarily briefly, in the regulations. The details of adaptation of these regulations to local requirements have been left to those in the States and communities who must bear not only the responsibility for furnishing two-thirds of the funds for construction but the full cost of maintenance and operation.

In order to make available to the States and communities facts and information necessary to good hospital plans, the Division has endeavored to bring to gether the experiences of as many authorities as possible. Here I would like to take this opportunity to express our appreciation to the American Pharmaceutical Association and the American Society of Hospital Pharmacists, to each of you as individuals, and, in particular, to Dr. Fischelis and Miss Niemeyer, for the excellent cooperation accorded the Public Health Service in the implementation of this program.

You may be interested in knowing that from the number of hospital plans submitted to date we are confident such guide material is being well utilized and will be reflected not only in an increased number but also better-planned pharmacies and improved pharmaceutical services in the hospitals which will be built under the present program and for long afterwards.

The Commission on Hospital Care, in its report, states:(2)

"Hospitals are now on the threshold of a period of development which will mark the beginning of a new era in the advancement of human welfare. The base of their financial support must be broadened, their services strengthened, and their availability extended to all people so that a complete and systematic service will be the heritage of the new generation.

"The haphazard development of hospital service of the past should not be extended to the future. The public must be made aware of and must assume its responsibility for the development and support of adequate hospital care on a community-wide basis. The expansion and development of individual institutions must be in accord with an over-all planned program for the community. Direct benefit will accrue to both hospitals and public through organized effort in the intelligent planning of hospital care. If planning groups, consisting of the representatives of the hospitals, the professions, and the public, fail to take full advantage of their opportunity to realign hospital care to match the needs and demands of the public, they will contribute to the bankruptcy of voluntary effort in the hospital field. Intelligent planning now will provide hospitals with an opportunity for future growth--growth in effectiveness, service, and public appreciation."

Here, then, are some of the challenges to hospitals, and to you as specialists in the field. These are challenges to our whole civilization, challenges to our community sense of profit and loss, challenges to the sciences and arts of the prevention and cure of disease. Hospitals have a brightly-focused role in this great drama and an opportunity never before equalled. We have done great things in the past, but much more waits to be done.

The challenges are down -- we must accept them.

(1) Interdepartmental Committee to Coordinate Health and Welfare Activities - 1938.

(2) Hospital Care in the United States, Report of the Commission on Hospital Care. 1947.

OFFICIAL STATE AGENCIES DESIGNATED TO ADMINISTER HOSPITAL SURVEY AND CONSTRUCTION PROGRAM

ALABAMA
State Board of Health, D. G. Gill, M.D., State Health Officer, Montgomery

ALASKA
Territorial Department of Health, C. Earl Albrecht, M.D., Commissioner, Juneau

ARIZONA
State Department of Health, G. F. Manning, M.D., Superintendent, Phoenix

ARKANSAS
State Board of Health, T. T. Ross, M.D., State Health Officer, Little Rock

CALIFORNIA
State Department of Public Health, Wilton L. Halverson, M.D., Director, San Francisco

COLORADO
(No information available at the time the directory went to press.)

CONNECTICUT
State Department of Health, Stanley H. Osborn, M.D., Commissioner, Hartford

DELAWARE
State Board of Health, Edwin Cameron, M.D., Executive Secretary, Dover

DISTRICT OF COLUMBIA
D. C. Health Department, George C. Ruhland, M.D., District Health Officer, Washington

FLORIDA
Florida State Improvement Commission, C. H. Overman, Director, Tallahassee

GEORGIA
State Board of Public Health, T. F. Abercrombie, M.D., Director, Atlanta

HAWAII
Territorial Board of Health, C. L. Wilbar, Jr., M.D., President, Honolulu

IDAHO
State Department of Public Health, L. J. Peterson, Acting Administrative Director, Boise

ILLINOIS
State Department of Public Health, Roland R. Cross, M.D., Director, Springfield

INDIANA
State Board of Health, Lee E. Burney, M.D., Commissioner, Indianapolis

IOWA
State Department of Health, Walter L. Bierring, M.D., Commissioner, Des Moines

KANSAS
State Board of Health, F. C. Beelman, Secretary and Executive Officer, Topeka

KENTUCKY
State Department of Health, P. E. Blackerby, M.D., Commissioner, Louisville

LOUISIANA
Health & Hospital Division, Office of the Governor, Charles Mitchell, Director, Baton Rouge

MAINE
State Bureau of Health, State Department of Health and Welfare, Leverett D. Bristol, M.D., Commissioner, Augusta

MARYLAND
Maryland State Planning Commission, I. Alvin Pasarew, Director, Henry P. Irr, Chairman, Baltimore

MASSACHUSETTS
State Department of Public Health, Vlado A. Getting, M.D., Commissioner, Boston

MICHIGAN
State Administrative Board, Lansing
(Name of director not known at time directory went to press.)

MINNESOTA
State Department of Health, A. J. Chesley, M.D., Secretary and Executive Officer, St. Paul

MISSISSIPPI
Mississippi Commission on Hospital Care, D. V. Galloway, M.D., Executive Director, Jackson

MISSOURI
Division of Public Health, Department of Public Health and Welfare, R. M. James, M.D., Director, Jefferson City

MONTANA
State Board of Health, B. K. Kilbourne, M.D., Executive Officer, Helena

NEBRASKA
State Department of Health, W. S. Petty, M.D., Director, Lincoln

NEVADA
State Department of Health, Fred S. Loe, M.D., State Health Officer, Carson City

NEW HAMPSHIRE
(No information available at the time the directory went to press.)

NEW JERSEY
State Department of Institutions & Agencies, Sanford Bates, Commissioner, Trenton

NEW MEXICO
State Department of Public Health, James R. Scott, M.D., Director, Santa Fe

NEW YORK
New York State Postwar Public Works Planning Commission, John E. Burton, Chairman, Albany

NORTH CAROLINA
North Carolina Medical Care Commission, James H. Clark, Chairman, Raleigh

NORTH DAKOTA
State Department of Health, William M. Smith, M.D., Acting State Health Officer, Bismarck

OHIO
State Department of Health, Roger E. Heering, M.D., Director, Columbus

OKLAHOMA
State Health Department, Grady F. Mathews, M.D., Commissioner, Oklahoma City

OREGON
State Board of Health, Harold M. Erickson, M.D., State Health Officer, Portland

PENNSYLVANIA
State Department of Welfare, Charlie R. Barber, Secretary of Welfare, Harrisburg

PUERTO RICO
Insular Department of Health, Juan A. Pons, M.D., Commissioner, San Juan

RHODE ISLAND
State Department of Health, Edward A. McLaughlin, M.D., Director, Providence

SOUTH CAROLINA
State Research, Planning and Development Board, Robert M. Cooper, Director, Columbia

SOUTH DAKOTA
State Board of Health, Gilbert Cottam, M.D., Superintendent, Pierre

TENNESSEE
State Department of Public Health, R. H. Hutcheson, M.D., Commissioner, Nashville

TEXAS
State Board of Health, George W. Cox, M.D., State Health Officer, Austin

UTAH
State Department of Health, William M. McKay, M.D., Commissioner, Salt Lake City

VERMONT
State Hospital Survey Commission, Lawrence C. Campbell, Chairman, Montpelier

VIRGINIA
State Department of Health, L. J. Roper, M.D., Commissioner, Richmond

WASHINGTON
State Department of Health, Arthur L. Ringle, M.D., Director, Seattle

WEST VIRGINIA
State Department of Health, N. H. Dyer, M.D., Commissioner, Charleston

WISCONSIN
State Board of Health, Carl N. Neupert, M.D., State Health Officer, Madison

WYOMING
State Board of Health, G. M. Anderson, M.D., State Health Officer, Cheyenne

TEACHING RESPONSIBILITIES of the Hospital Pharmacist*

By Herbert L. Flack
Jefferson Medical College Hospital
Philadelphia, Pennsylvania

The modern hospital pharmacist has many responsibilities insofar as teaching is concerned. It is important that these responsibilities be met if the hospital pharmacist is to accept his key position in the field of medical and pharmaceutical education.

In the past, the pharmacist in many hospitals has been thought of as a necessary expense of hospital operation. This aspect is changing, or is being changed by a group of forward looking individuals in key positions who see in hospital pharmacy a very professional and enjoyable means for a life-time of service to the medical and pharmaceutical professions, at salaries that could be surpassed only if these persons were to own and operate a professional pharmacy.

What responsibility have I to teach anyone, who am I supposed to teach, and how should such a program be developed? These questions have probably come to mind right now and I will spend the time allotted me in attempting to answer them.

Let us look around the hospital and note the various types of personnel engaged in the over-all operation. There is the hospital administrative staff, the medical student, the intern and resident physician, the practicing physician, the dentist, the student nurse, the graduate nurse, and then there is a large body of men and women ranging from technicians through to the clean-up crew. We have an obligation to teach these groups many things, the subject differing slightly with each different group. Let us look at the pharmaceutical side of the hospital and we have graduate students and interns in pharmacy, undergraduate students or apprentices, staff pharmacists, detail men, and the various patients who come to the pharmacy for their medication. Each of these types of persons presents an educational challenge to the modern hospital pharmacist that he must meet if he is to make true progress in his chosen profession.

In speaking of the hospital administrative staff, I mean chiefly the medical director and/or business manager, with whom you must cooperate and from whom you must receive cooperation. Somehow you must impress these persons with your ability as chief pharmacist and with the value of you and your staff to the over-all economy of hospital operation.

The subject of monthly reports will be presented by Mr. Lauve. He will tell you about, and I hope the majority of you already realize, the value of monthly and yearly reports to you and to the hospital administration. Many persons have advocated the use of unions and of strikes for securing higher wages and better working conditions from hospital administration. Such thinking is definitely short-sighted and will cause much more harm than good. Your educational responsibility is to inform, to teach your administrators and your supervisors that competent pharmaceutical service is going to cost money but that for every dollar spent for competent services, there will be so much of a saving in over-all operation of the pharmacy. You can do this through the medium of periodic reports. Do not be afraid to brag about the things you do in the hospital, for often the administration does not realize that such economies or such services are being provided by your staff. Statistically, prove that the cost of drugs used per patient day has been reduced. Tell them how much nursing time is saved through mass dilution of antibiotics in the pharmacy and through preparation of multiple dose vials for parenterals. Inform them of the number of prescriptions, floor baskets, and drug charges that are filled per day and per year, how much you save per manufacturing hour, and of additional responsibilities that you have assumed. Let them know that you have the pharmaceutical operation of the hospital under control, teach your administration

*Presented at the Third Institute on Hospital Pharmacy, June 28 - July 2, 1948 at Princeton, N. J.

that they can depend on you for proper supervision of drug dispensing and drug use in the hospital. The good administrator realizes that he must have certain key men, namely department heads, on whom he can rely without close scrutiny or supervision of their activities. You must maintain the confidence of the administration in your ability to supervise pharmaceutical activities and you can best accomplish this through medium of periodic reports--a program of constant education.

What responsibility have we to teach the medical student, intern, resident, or practicing physician, and the dentist. I must apologize at this time for not being able to offer comment on our teaching responsibility to the dentist. I believe it is a program that must be expanded in hospital pharmacy and in the colleges of pharmacy. Just the other day I received a letter from the U.S. Public Health Service requesting a copy of the dental formulary or drug list of dental medication supplied by the pharmacy. We have no such list, but when I return home, that will be the first project for one of my pharmacy interns--the preparation of a dental formulary. The dental department is one of these we have neglected and I assure you that such neglect will be rapidly rectified.

I am convinced that we in hospital pharmacy can do more toward raising the level of our profession of pharmacy in the eyes of the physicians of the nation than any other single force. We begin with the young medical student and meet with him in pharmacology or in his junior internship. Next we serve his needs as a resident physician for three years or more and finally we can cooperate with him as a physician on the hospital staff for many years. What other branch of pharmacy has the opportunity to closely associate itself with the physician in his infancy, to offer cooperation during his period of formal training, and then to assist the physician over the rough beginnings of his practice and through to the crowning days of his career? No, not even the professional retail pharmacist has such a great opportunity to mold the pharmacological future of the physician. No other group of persons has a like opportunity to properly influence the physician, to teach him the inestimable value of competent pharmaceutical service and cooperation. You and I must aggressively seize such an opportunity and realize that we have a teaching responsibility to the medical profession, that if properly executed, will have a profound influence on the general health and medical welfare of this great nation.

Probably only a few of us have the opportunity to teach prescription writing to medical students by any series of lectures, but we all have the opportunity to indirectly teach this subject to not only medical students, but to interns, residents, and practicing physicians, by informing them of errors or insufficiencies in their prescription writing or by recommending better methods of prescribing a particular drug. In the majority of cases, the physician is glad to know of the better method or of the new form of medication and will change his prescribing tendencies. Such contact can be made by telephone or in person.

An important method of influencing the physician for the good of pharmacy, is by offering a top-notch information service. In my own department, I have recommended that the staff pharmacists be always receptive for a doctor's request for help or for information, whether the request be made by phone or in person. If we cannot find the information in our library, then we decide a course of action that will provide the answer. I have even recommended that the staff pharmacist who received the question stop his activities or turn them over to someone else so that he may pursue the answer to the problem.

If the request is by telephone, my secretary answers the phone with a business-like "good morning, pharmacy secretary." There is no reply such as many of us have received of "hello, drug room." If she can take care of the call, then all is well; otherwise a pharmacist is summoned who identifies himself and offers to help whoever is on the phone.

A further attempt at education of the physician has been approached by several hospital pharmacists and by many professional retail pharmacists, in the form of a periodic news letter to the physician clientelle. The purpose of this letter, or as we call it, the HOSPITAL PHARMACY NEWS, is to act as liaison between the pharmacy and the physician. The NEWS presents the pharmacy as an important source of accurate, unbiased information concerning drugs and rational drug therapy. Comparisons of official drugs with identical or nearly identical proprietary medications can be presented in the NEWS with a statement about the comparative cost of each type of medication to the patient. Invariably the official (which includes the U.S.P., N.F., and the Hospital Formulary) drug or medication is available at a patient cost much less than the cost of proprietary medication. At this point I would interject an opinion about cost of drugs in relation to Blue Cross patients or prepaid plan care.

It seems that every day we hear of some new hospital that is overwhelmed by a financial burden. Invariably the blame is laid on Blue Cross or on the prepaid hospital care plans and the thought is presented that Blue Cross must pay more for drugs. It is highly possible that Blue Cross cannot pay more for drug charges except by passing the increased cost of operation on to the plan subscribers, which is not thought desirable. The solution might well be a requirement that only official drugs can be used on the patient and included in the plan rate, other medications being charged

Hospital Pharmacy News

VOLUME II April 1948 Number 1

(Published in the interest of creating liaison between the Pharmacy and the medical staff of Jefferson Medical College Hospital.)

NATIONAL PHARMACY WEEK - The week of April 18 through April 24 is National Pharmacy Week. The theme of this year's observance is public education on cancer control. In cooperation with the American Cancer Society, about 18,000 pharmacies throughout the nation are working in a concentrated effort to disseminate information to help conquer cancer.

The public is being urged to recognize certain ac
indicative of the onset of cancer. The pub
to meet the terrific expenses of cancer
was available for cancer research
The American Cancer
funds received
collected

directly to the patient. Since such a plan is not presently under consideration, you and I as hospital pharmacists must exercise additional responsibility in educating our physician clientelle to the fact that if hospitals are to continue in a progressive type of operation, in fact we might state that if hospitals are to remain in business, the physician must prescribe the official counterpart of any proprietary medication that he cares to use. Here again the HOSPITAL PHARMACY NEWS can play a part, as we plan to do at Jefferson, where we will play up that idea of the necessity for using official medications in place of expensive and probably no more effective or maybe even identical proprietaries, if the hospital is to continue to maintain proper service to the community and to allow the physician the use of its facilities in limitless quantities. We must educate the physician to the fact that in a hospital pharmacy, we have the great advantage of volume purchasing, which tremendous advantage is offset every time a physician prescribes a proprietary medication that closely approximates an official preparation.

As you will note from reading the NEWS' from other hospitals, which have been reproduced to give you an idea of what can be done, other types of information can be included in the NEWS which can be of value to the physician, and which, if it were not for the medium of the NEWS, would be difficult to place before the busy physician. At this point I would like to show the wonderful job that Chief Pharmacist Eddie Wolfe did at the Mount Alto VA Hospital with a NEWS letter to his physicians. Only one bad fault is that it is the only number of the NEWS which I have had the privilege to read. A NEWS letter, to be effective, must be presented at regular intervals, and I assure you that it is no easy job to accomplish, even though you turn one out every two months instead of every month.

Other information besides comparisons of official and proprietary medications that can be presented in the NEWS is a discussion of new barbiturate and narcotic regulations, new services offered by the hospital pharmacy, new drugs and their comparison with existing medications, recent advances in therapy, and we at Jefferson have felt it desirable to include abstracts of the weekly "Medical Seminar" conducted by the Department of Medicine of this Hospital. Of course, there is little use in printing material that does not concern drug therapy, but after all, drug therapy is the chief weapon of the Medical Department and there should be ample material.

Many hospitals have periodic publications in which are printed the minutes and meat of the various departmental or staff meetings. At present, Jefferson has no such means of disseminating the valuable information that is presented at such meetings as the weekly seminar of the medical department or at the gynecological staff meetings, etc. After commencing regular attendance at the medical seminars and taking notes, I began to realize that there was much choice information presented here that was wasted. Physicians in attendance were mostly the same men of the hospital and medical college with few of the intern and resident staff and about none of the general staff members being present. These

Pharmacy Exhibit at Mary Immaculate Hospital
Jamaica, N. Y.

men who were not present seemed to me to be the ones who needed that information the most, for subjects discussed were the use of Teropterin in cancer therapy, Aminopterin in Leukemia, Folic Acid and liver in the various anemias, and other reviews of modern day drug therapy. Since our NEWS was sent to all active members of the hospital staff, we thought it desirable to include a résumé of the seminars with the hope that it would make the NEWS that much more valuable and desirable to the busy physician. With cooperation of the medical department, we have already published one seminar and have just issued the second abstract of seminars. Incidentally, make certain that the discussion as published has been approved by the physician whose name appears as the discussor or lecturer on that subject. A few statements included without knowledge of the responsible physician might well upset further coverage of this type of information.

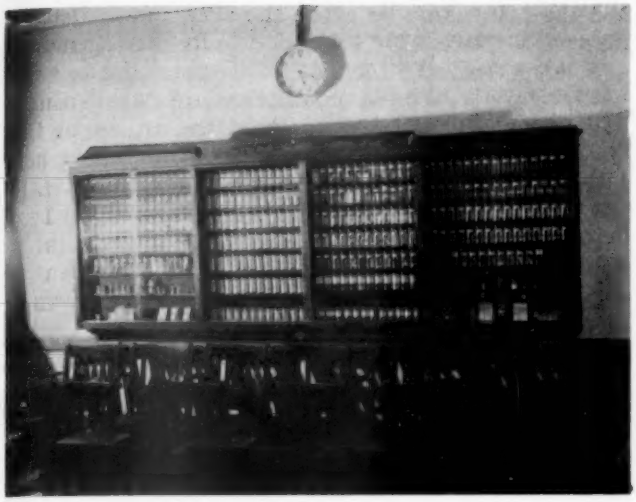
I have noted some issues of NEWS letters published by other hospital pharmacists that contain descriptions of various proprietary medications. If these descriptions included some rational comparison of the clinical effectiveness of the various drugs, especially a study run in the particular hospital, then I would include such information in the NEWS. I cannot see the real value, however, to including information about new drugs that presents facts that might easily be obtained by the physician from reading a brochure supplied by the company manufacturing the product. In other words, we in the hospital pharmacy are greatly outnumbered by pharmaceutical representatives and by detail men the way it is. These persons probably meet every member of our staff more often than we do, they are constantly detailing our medical staff and thus providing additional educational problems for the hospital pharmacist. Why list all of the available anti-histamine drugs UNLESS we are presenting a study of the comparative efficacy of them, and UNLESS the results of the study prove that the anti-histamine drugs accepted in our formulary are the most effective or least undesirable? We have to detail formulary drugs and official products, and counter-detail the work of the thirty or fifty pharmaceutical detail men who call on every hospital. We must reserve the HOSPITAL PHARMACY NEWS for this purpose. At this point I had better come to my own defense and explain the proprietary items that have been included in the NEWS at Jefferson. We have spoken of Teropterin, Metopon, Methadon, and a few other proprietary drugs that have recently been released or that have recently been high-lighted in the medical literature. These are outstanding drugs and have not been duplicated by other manufacturers under those titles. These are logical drugs to discuss in the NEWS.

So much for the HOSPITAL PHARMACY NEWS as an adjunct to the educational program of the hospital pharmacist in influencing the prescribing tendencies of his physician clientele. Let us now look at other means for educating the embryo and practicing physician. I have a series of slides which depict displays that Sister Jeanette, Chief Pharmacist of Mary Immaculate Hospital, has set up in the physicians' cloak room of her Hospital. These displays have presented various groups or types of drugs and medications to the physician staff - drugs and medications that Sister Jeanette wants her physicians to know about and to prescribe, and not just a series of proprietary drugs that have been placed on the market.

Walter Frazier, Chief Pharmacist at Springfield City Hospital and Eddie Wolfe, Chief Pharmacist at Mount Alto VA Hospital have both included drugs mentioned in their NEWS letters in a display in the physicians' lounge or cloak room and have used such a visual display as a further addition to the NEWS letter. This is certainly more desirable than to allow the various companies to set up displays in such strategic positions in the hospital. I think we all might consider such displays as an excellent approach to the subject of educating the physicians of our hospital to the need for prescribing official drugs and of displaying the forms of new medications that are available in the pharmacy.

It might be interesting to note that Mr. Frazier's NEWS letter is being reprinted in the periodic issues of the county medical society's publication. This is fine for it provides a tie-in of the hospital pharmacy with the medical society news.

Every year during National Pharmacy Week, we should extend an invitation to the physicians of the hospital, and in fact to all hospital personnel, to visit the pharmacy. This invitation can be extended in an issue of the HOSPITAL PHARMACY NEWS or in any other form of announcement. This past year, we at



Display of Floor Drugs in Nurses' Lecture Room
Mary Immaculate Hospital, Jamaica, N.Y.

Jefferson extended such an invitation and in so doing, described the tour that the physicians could make in five minutes of his busy time. We mentioned the pieces of equipment that he would see and maybe just bragged a little about the things that we wanted him to know about. We did not expect many physicians to make a special trip to the pharmacy and not many did so, but I believe we got over the idea that in the pharmacy we do more than count pills, and that we have the equipment, personnel and the desire to help the physician by providing a professional type of service.

Let us turn to the nursing staff and see what educational responsibilities we have for this group. First, I believe we have a responsibility to teach student nurses pharmacology and medical arithmetic. The chief pharmacist has the opportunity to present information about the therapeutically effective drugs used in the hospital and to use the technic of visual display to show the students the form of every type of drug or medication that he discusses. This subject allows the presentation of information about official titles versus proprietary titles. Since the majority of drugs are dispensed under the official title, and the physician often prescribes in terms of the proprietary title, unless sufficient time is given to the synonymous proprietary titles for official drugs, the nurse will become greatly confused. Presentation of this course also offers the pharmacist the chance to explain various procedures in the pharmacy which effect the nursing staff and which the nursing staff from time to time might abuse or might not understand.

I would warn anyone, who plans teaching such a course, that for the first year or for the first series of lectures, many nights and week-ends must be used in preparation of the outline and substance of the pharmacology course. More than one textbook must be used also, if modern information is to be presented. Sister Etheldreda has prepared a comprehensive survey of pharmacology text books for teaching student nurses in the July-August 1947 issue of THE BULLETIN OF THE A.S.H.P. (Volume 4, Number 4), and I would recommend this article to anyone anticipating teaching such a course.

Sister Jeanette has used visual education in teaching student nurses, to the point of installing a cabinet in the nurses lecture room, wherein are kept all drugs stocked in the pharmacy. All floor drugs are displayed in this cabinet in the identical container that they would be found in the floor drug cabinets.

Many persons have required the students to keep scrapbooks during the length of the course and have given a grade on the basis of type of material included in the scrapbook. The student's notebook is also collected at the mid-semester and final examinations, and a mark is given for the volume of material or type of notes maintained. Both of these requirements have a tendency to make the student take a little more pains with preparation of the course, and the scrapbook, especially, has the possibility of making the students look through the literature (mainly the newspapers, Reader's Digest and Good Housekeeping) and thus keep abreast of what's new in medicine. To disseminate this information to the whole class, we at Jefferson take ten or fifteen minutes a week for a discussion of new drugs and a review of the current literature. Any nurse volunteering information is asked to stand up and present it to the class. Some few of them really take pride in giving a good résumé of what they have read. I believe these are three good methods for maintaining interest in the subject. Another means of educating the nursing service is thru use of a periodic Nursing Staff Bulletin in which new procedures can be presented and various bits of essential information can be offered for the nursing service. Of course, the Hospital Pharmacy News should be sent to every nursing station, besides being sent to all staff physicians.

Now let us approach our educational responsibilities to the various other personnel of the hospital, namely the technician, and various lay persons. These persons have the opportunity to see pharmacy in action outside the hospital in retail stores. We must make certain when we care for their pharmaceutical needs in the hospital, that the picture they obtain of pharmacy is a good one. Now you might be chief pharmacist in a hospital that compares in stature and beauty with the New York Hospital, or you might be in a hospital that in appearance compares favorably with ancient architecture. If you have not much to begin with,

then you have a tough struggle in order to present a type of pharmacy to the personnel of the hospital that appears to be good. If you are nicely fixed, then you still have a struggle to maintain the good foundations that have been built for you, to keep the practice of pharmacy in your hospital on a level with the best professional practice in the country. There are two ways to do things - one is the best way, the correct way; the other is the next best or second best method. I would present the story of the preacher traveling in Ireland who was whistling while walking down the street. A young lad came toward him and kept staring as he approached. The preacher stopped when the lad was in front of him and asked the boy why he was staring at him. The young lad replied, "I bet that I can whistle better than you have just been whistling." The preacher asked him to try and the young lad whistled a pretty tune. The preacher agreed that the whistling was better than he had done, but offered to outdo the lad by whistling another tune himself, a little better than before. This the preacher did, and the quality of his whistling was very fine. When he was through the young man asked him why he did not whistle that way all the time. Right then and there the preacher had material enough for many sermons in the future - why didn't he whistle his best all the time, why didn't he do his best all the time. We in hospital pharmacy must continually look and do our best, for we have an unceasing spotlight upon us that will pick out the smallest flaws for these various groups of hospital personnel to see.

What educational program have we for graduate students and interns in hospital pharmacy? In the July-August 1947 BULLETIN OF THE A.S.H.P., Mr. Leo Godley has presented "Prerequisites for Hospital Pharmacy Interns." In the May-June 1947 BULLETIN, Mr. Donald A. Clarke has presented "A Scheme For Hospital Pharmacy Internship." In the March-April 1948 BULLETIN, Dr. W. Arthur Purdum as chairman of the A.S.H.P. Committee on Education has presented an "Outline For A Course in Hospital Pharmacy." Sister Mary John has presented the subject "Hospital Pharmacy Internships" in Hospital Progress for November 1946, in which she has presented an outline for internships in hospital pharmacy originally worked out by Mrs. Evlyn Gray Scott. Since every person's views differ a little on this subject, I would present the literature references just mentioned as a basis for anyone to originate either a lecture course in Hospital Pharmacy Administration, a combination intern-graduate student course majoring in hospital pharmacy, or just a plain internship.

On the graduate student-internship course, I would offer the following comments. I firmly believe that such a course must have the graduate study and internship running concurrently. I cannot see how the didactic work can be given one year and the internship be given the other year and still turn out a thoroughly grounded individual, for there are many subjects that must be presented to which justice cannot be done unless there is paralleling or concurrent laboratory instruction or on-the-job training. I believe that the total number of intern graduate students should not exceed the total number of registered pharmacists. Many Boards of Pharmacy have such regulations for internships or apprenticeships and I believe that such a rule should be carried through to both the graduate student and regular types of internships. This is required to insure adequate supervision of the intern.

The graduate subjects that the intern might take must of course be based on his undergraduate training. Though the student might have had adequate training in pharmacology, I believe it best to require him to take the same course in pharmacology as the medical students take - with the medical students. This will allow the embryo hospital pharmacist to see inside the training of the embryo physician, will allow him to obtain a more intimate contact with the physician during his training, and at the same time will give him a refresher course in pharmacology. If biochemistry has not been taken in the undergraduate curriculum, it should be taken with the medical students, and if a graduate level course of biochemistry is given, the student should be allowed to take this course the second year. Biochemistry is becoming of increasing importance to the proper understanding of drug action and of drug deficiency states. If the pharmacist is to be of help to the physician, he must know possibly even more about this particular subject than the busy physician will have time to learn.

Some course of instruction in the principles and methods of teaching should be required of the student, for it seems that hospital pharmacy work is one continual job of teaching or educating someone, as I am trying to prove in this particular talk. A study of, or course in personnel management, should be required of the student to provide the basis for a successful career as chief pharmacist or in another administrative position in the hospital. A course in analysis of medicinals, or possibly even semi-micro-analysis of medicinals should be required so that the student is able to run the necessary control procedures that are required not only in the large hospital but in any hospital that does any manufacturing.

The student should be required to carry out a research project that pertains to hospital pharmaceutical practice and should be able to use this research and the accompanying paper for his thesis. He should have some small lecture course in advanced organic chemistry as it pertains to phar-

maceuticals and should have some course in physical chemistry unless this subject has been covered in the undergraduate study.

The student should be required to attend the various therapeutic seminars, clinics, and lectures held in the hospital, in fact it might be well to have one or two students attend each such lecture and then prepare an oral report of the lecture for the other graduate students and for the staff pharmacists.

For the first month of the graduate intern training, which will be the month of July, the student should be introduced to the hospital environment by a complete tour of the hospital. This might be accomplished in one or more days, but it should include every department and floor so that the new student will obtain a thorough insight into the magnitude of hospital operation. During this month the student will rotate from day to day in the various divisions of the hospital pharmacy, not spending too much time - at one time - in each division, but attempting to obtain an over-all view of pharmacy operation. By the end of the first month the student should be familiar enough with the department to be able to assist in any of the divisions. The next eleven months of on-the-job training consist of a rotating schedule that will require the student to spend several months in each of the main divisions of the pharmacy, the administrative, in-patient, out-patient, and manufacturing divisions. This takes us up to the following summer at which time the student is allowed to take a month's leave of absence, if desired. For one month in the second summer, the student is required to act as observer in the following hospital departments: administrative, purchasing, receiving, accounting, storeroom, nursing education, dietary, allergy laboratory, clinical laboratory, hematology and blood bank, and several other divisions of the hospital with which the student should have intimate knowledge.

During the second school year, the student repeats his on-the-job training steps, this time more as a supervisor of activities for the new group of interns, ending with a period wherein the student becomes acting chief pharmacist for a period of a week or two. Now school is over, the student receives the degree of Master of Science in Pharmacy, is awarded a diploma of internship from the hospital and certified as capable of operating a hospital pharmacy as chief pharmacist.

Let us now look at undergraduate students or apprentices in pharmacy. I believe the colleges of pharmacy might well shape their course of instruction so that in the senior year, the student has the opportunity to obtain practical experience in an actual operating professional pharmacy, and obtain credit for such experience. I believe that the professional pharmacists in cities where there is a school of pharmacy should assume an obligation to provide professional experience to every college student as part of the undergraduate instruction. This would best occur in the senior year and would thus provide that every graduate of the college had been exposed to the joy of working in a professional establishment and of knowing the many responsibilities involved in such operation. If this were done, possibly our graduates would be ashamed to work in some of the stores that they turn to.

To return to the undergraduates, I believe that we in hospital pharmacy have an excellent opportunity to present professional pharmacy to these apprentices. The only trouble seems to be that no one is interested in offering or taking the time to offer such education to apprentices. This past month, I believe we had six applicants for work, students in the various years of college who did not relish returning to the soda fountain jobs that they have had in previous years. Sure they did not have much prescription experience, but where can they obtain such experience save in a professional store? We in hospital pharmacy are lax in assuming this educational responsibility.

In all fairness to our interns, we could only take on one such student, a young lady with no experience in pharmacy. We have had her for a period of two weeks now, and she is deeply enthused about her job (for which she receives two meals a day) and we are just as enthused with her interest in the work. We began her with several days of just typing labels for prescriptions, then a day on ointments, a day on mixtures, a day on simple solutions, on capsules, and now she takes prescriptions as they come. Of course she requires close supervision, but her efforts repay the time involved in such supervision. I have tried to convince hospital pharmacists in my area that they should cooperate in such ventures, that they should assume a responsibility for educating embryo pharmacists, but they have exhibited no interest. I even try to point out that they are able to make money on such persons, due to the fact that the person works for about nothing and within a few weeks is able to accomplish many procedures that save the time of a pharmacist, but even this thought of money saved is not tempting. I wish that each of you would return, somehow imbued with the spirit of the educational responsibilities that you have, and then do something about it, even if it is only assisting some young person to obtain an insight into professional pharmaceutical practice.

Lets look at education of the staff pharmacists. When a new product is detailed to me, I request the usual samples and also sufficient brochures and literature for my file and for each staff and intern pharmacist, which beginning next week will total ten such personnel. Thus each staff member receives the same literature on the new products as I do. Every month we hold a staff meeting at

which time I present any new procedures involved in the hospital operation or in the functioning of the pharmacy, and the staff pharmacists each present a review of certain journals and literature references assigned to them. You will note some of the journals marked with an asterisk listed on the material that has been presented to you. New drugs are discussed and a general attempt is made to keep abreast of the times through this medium. My staff tries to attend the various pharmaceutical, chemical, and medical meetings that would be of interest and the member attending presents an abstract of the meeting at the next monthly staff meeting.

Let us look now to the detail men, and you might wonder what they have to do in this educational aspect of the hospital pharmacist. If your detail man is a good one, he can help educate the chief pharmacist on the new trends in proprietary medication. The detail man can be a menace however, and the hospital pharmacist must educate him as to his place in the hospital picture. First thing is the time and frequency of his detail of the chief pharmacist. Many representatives come and go at their convenience, taking as much of the pharmacists time as they can get. We don't have time for that, there are too many other responsibilities that we must tend to, to spend much time with the detail man. We used to see detail men whenever they chose to come. We suddenly realized that one pharmacist was almost always occupied with some pharmaceutical representative and that this occurred about five days of the week. That was too much time for such doings, so we had a sign printed announcing that we would see detail men on the first and third Tuesdays of every month. This has certainly worked to our advantage and we are just at the point where we feel the need to see detail men only once a month. In order to do that, we are going to have one day a month open for their visits, will allow them to make appointments, and will honor these appointments. Those men not desiring to make appointments, will have to take their chances. Of course, this holds for the local detail men. Some few have wide territories and we talk with them when they come around. For those we do not care to see, my secretary points to the sign and asks them to return on the days appointed for such details. I believe each of you who have no such schedule might take advantage of our experience, and of the experience of many hospital pharmacists and allow yourself to be detailed on certain days only, and then educate your detail men to that fact and to the fact that you are a busy person and don't have time to listen to a line of talk about the relative merits of one manufacturer's proprietary as compared with an identical product manufactured under another name by some other firm.

Finally we come to the patients, who come to the hospital as either in-patients or out-patients. Our out-patient service, whether to poor or rich, should present pharmacy in a professional atmosphere and by use of professional technics. Though we have not the best atmosphere in our out-patient pharmacy, we do have many patients who state that they would not take their prescriptions anywhere else, for they have confidence in our ability to do a good job with the prescription, despite the fact that they must know they could get the Rx filled more economically at some cut-rate store. I believe we have the confidence of our doctors also, for very few prescriptions are phoned out to professional stores for delivery to the in-patient. Maybe a lot of this is due to the fact that we try to present floor stock with clean neat labels in standard size containers, with of course a good-looking product in the container. Special Rx's or charge drugs are treated in the same way, for we know that often the patient sees the container in which his medication is situated and the sight of such container or medication, if not good, might have a deleterious influence on the patient. The same holds for out-patients, who must be treated as humans, not as a mob of poor people who must wait in line and be shouted at. We must educate these persons to the value of competent pharmaceutical service so that when they leave the hospital, they will not be satisfied with bringing a prescription to a cut-rate store or to just a drug store, but will look for a store that specializes in the compounding of prescriptions and will obtain their medication from such a place.

Dr. Elliott, Director of the Pharmaceutical Survey has recently stated that only 20% of all pharmacists are professional pharmacists. I sincerely believe that his 20% figure included every hospital pharmacist here and probably the majority of hospital pharmacists in the country. Dr. Elliott stated, "Professional pharmacy will soon become extinct unless a far larger proportion of those who practice pharmacy become 'keenly jealous' of their high professional standing." Here is another challenge to each of us, that ties in with our teaching responsibilities as hospital pharmacists. Let's become jealous of our high professional standing and through our many opportunities in hospital pharmacy educate others to the fact that if hospital pharmacy continues to raise its standards, that if hospital pharmacy is presently willing to take on young men and women and teach them the professional side of pharmacy, and that if hospital pharmacy will continue to play a part in the education of the physician and nurse, then the profession of pharmacy as practiced in the hospital, will soon be the most outstanding, best paid, and most desirable field of pharmaceutical endeavor.

Purchasing*

FACTORS IN GOOD PURCHASING METHODS FOR THE HOSPITAL PHARMACIST is presented at the Institute on Hospital Pharmacy.

By John J. Zugich
New Haven Hospital
New Haven, Conn.

In a broad generalization, the function of purchasing if done well consists of buying materials of the right quality, in the right quantity, at the right time, at the right price, from the right source.

The hospital administrator expects his pharmacist to formulate policies for purchasing which gives consideration to the generalizations mentioned, coupled with management and operational methods within the department in addition to application of his special training and knowledge regarding drugs. He presupposes the pharmacist is the expert in the hospital organization in the purchase of pharmaceuticals.

Why is the purchase of pharmaceuticals a serious matter to the administrator? Fifteen to twenty-five per cent of the total purchases of the institution consists of pharmaceuticals. The cost of supplies (drugs) represents 80-90% of the total operating expense of a hospital pharmacy.

In 1939, $34,000,000 were spent by hospitals for drugs. Due to new factors entering, it would be within safe limits to estimate that today $75,000,000 is being expended by hospitals for drugs.

Who controls the expenditure of this $75,000,000 annually? A survey of 500 general hospitals in all parts of the country, disclosed that 85% stated "the control over the purchase of drugs was vested with the hospital pharmacist."

Indeed, the partial justification for employment of a pharmacist in the hospital is to create economies by judicious purchase of drugs. If a saving can be developed by employment of better purchasing principles using bona fide methods (thus avoiding the taunt of "chiseling" uninformed vendors direct to hospitals), then the hospital pharmacist is applying, practically, the factors which are involved in hospital supplies purchase, which are basically the same as those in industry.

That is the purpose of this discussion-to study those factors as applied to hospital pharmacy.

Institutional needs vary. Purchasing in the small hospital pharmacy may consist of verbal requests for materials, paper detail is at a minimum and mere judgment is resorted to without recourse to records. We have the pharmacy that procures its major share of pharmaceuticals from pre-designed specifications and quantity limitations issued by a national or regional procurement division. That is the procurement method for a government hospital pharmacist. Being mindful of these exceptions, I shall endeavor to develop considerations for the average hospital pharmacist.

RELATIONS WITH THE HOSPITAL PURCHASING AGENT

The purchasing agent in a hospital (if he is a good one) recognizes the policy that the pharmacist has the prerogative for specifying pharmaceuticals. The purchasing agent will consider himself an agent for the department head. Once specifications are set (not infrequently in conference between the pharmacist and himself), he will be responsible for initiating the mechanics of placing and receiving the material. It is his duty to contact the seller, expedite or follow-up an order, secure bids, samples, etc.--as one agent admitted, "do the dirty work."

The pharmacist must recognize the need for unified control of purchasing in the hospital. It is centralized in the office of the purchasing agent. The pharmacist must recognize the privilege of the agent to question and confirm all purchases in the institution. The pharmacist should conform to the necessary procedures and records as demanded by the purchasing agent.

A recalcitrant purchasing agent should be reminded that purchasing is not done for its own sake, but to implement the phases of hospital operation, in this instance the hospital pharmacy. The recalcitrant hospital pharmacist must recognize the need for central control and supposed "red tape" concerning requests.

Close cooperation and coordination between the pharmacist and the purchasing agent is the essence of good purchasing for the pharmacy. For the hospital, it utilizes the talents of two specialists in its organization. It is a protective factor in improper expenditure of its funds. It achieves the broad objectives previously stated as buying the right quality, in the right quantity, at the right time, at the right price and from the right source. Let us consider these and what factors effect them.

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*Presented at the Third Institute on Hospital Pharmacy, June 28 to July 2, Princeton, N. J.

DETERMINING PROPER QUALITY

In pharmacy, the quality of a drug is the paramount consideration.

Unfortunately, the average pharmacist cannot determine quality directly by analysis or physical tests. They are too complicated by virtue of facilities and time at hand for the type of drugs in our therapeutic armamentarium today. Then what can be resorted to?

The drug can be measured by its performance. For example, through evaluation by the Pharmacy Committee and medical staff, new varieties of penicillin can be judged for effectiveness against previously proven products.

In our institution the hurried marketing of procaine penicillin on the basis of minimal reports was viewed as possibly not the complete panacea for lowering costs in hospitals for the use of penicillin. Did the quality of a variety of manufacturer's products fit our use?

Over a period of a month and a half numerous products were compared, on active pyogenic infections, blood serum levels were tabulated. One product in the early development of this drug showed consistently even "quality." Various batch lots of other manufacturer's were not consistent. Quality was determined by measuring its performance.

As every pharmacist knows, the quality of a drug can often be determined by using the easiest method. Purchasing by brand name or manufacturer is based on the experiences of the pharmacist for integrity of the seller. Judgment of quality in this manner should not be colored advertising, hearsay or prejudice.

The disadvantage to purchasing by brand name is that it restricts sources of equivalent products and eliminates competition.

U.S.P. and N.F. minimum standard specifications as a determination of quality are too well known for elaboration. However, the average pharmacist all too frequently overlooks a source of information for quality of drugs, in the more inclusive and current New and Non-Official Remedies.

Statements by the Committee on Pharmacy and Chemistry appearing almost weekly in the Journal of the American Medical Association should be followed closely. Current drugs are evaluated from an unbiased approach. If the Journal is not at hand, statements are reprinted in such pharmacy journals as the Practical Edition of the Journal of the American Pharmaceutical Association and the American Professional Pharmacist. Drugs bearing the seal of this committee is tantamount to right quality. If the statements are desired to be kept in a bound volume in the pharmacist's library the "Reports of the Committee of Pharmacy and Chemistry" can be obtained.

A series of evaluation of drugs by clinicians, although not all-inclusive, appear in the Cornell Conferences on Therapy, an edited series of the conferences published by MacMillan and Co.

Finally, purchasing the right quality demands close attention to specifications, particularly in

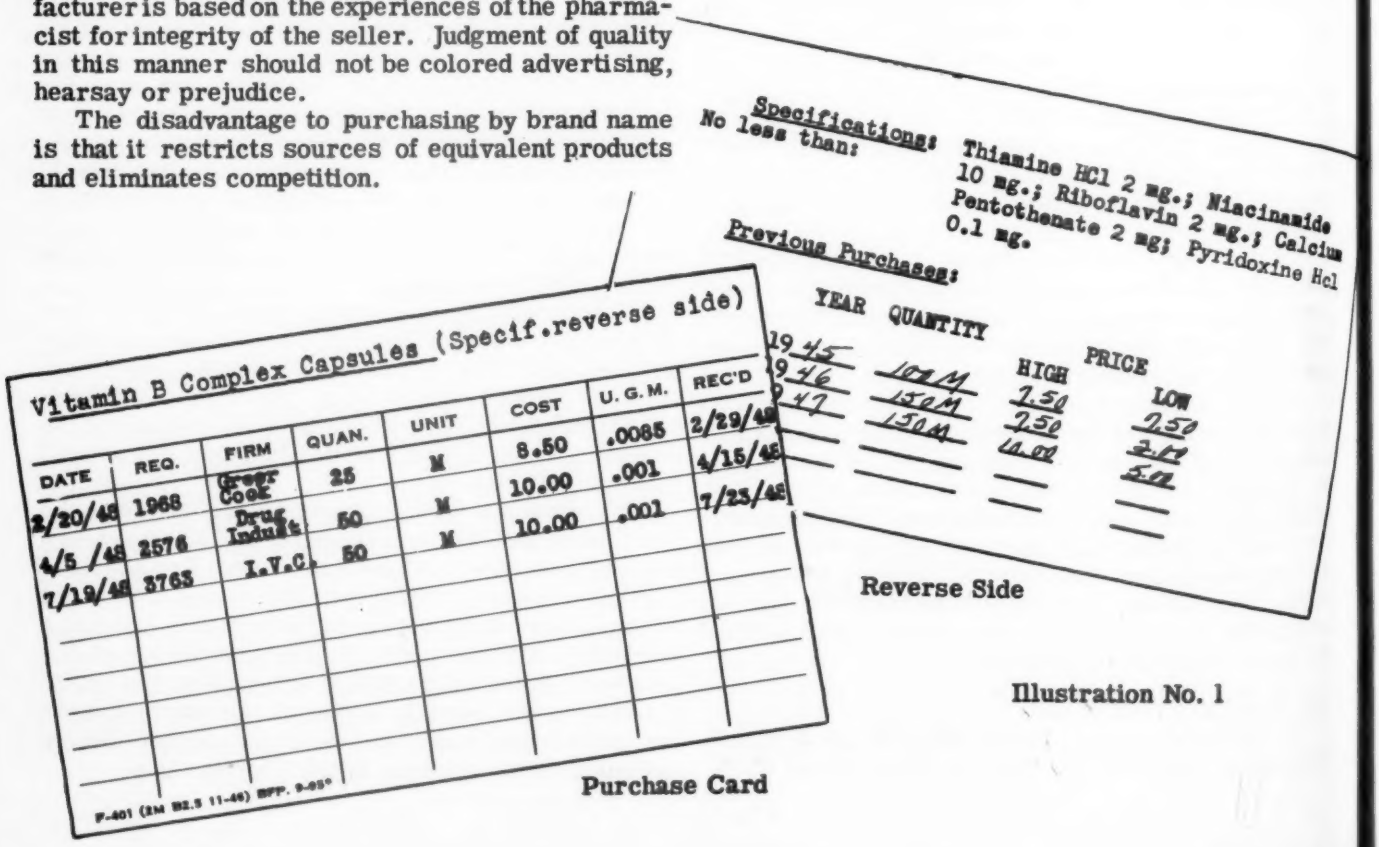

Illustration No. 1

non-brand name products or not yet official drugs. As an example, Brewer's Yeast may be obtained in a variety of apparently acceptable products unless the specific quantities of Vitamin B factors are specified. Delayed action injectables may contain cottonseed oil where sesame oil would develop less allergic manifestations. Liver injections made from pork liver may be less applicable universally when compared to those obtained from beef liver. Immersion cedarwood oil may be less valuable to the laboratory unless its refractive index is stated in its specifications for purchase.

DETERMINING THE RIGHT QUANTITY

Keeping a record of all purchases in some easily tabulated and accessible form is a necessary factor in determining the right quantity of a drug to be purchased. The use of judgement without records can only be excusable in the very small hospital pharmacy. By a record, reference is not made to tabulation and filing of invoices by supplier which are referred to as the occasion arises.

A simple device applicable to the average hospital pharmacist is the use of a 3" x 5" card file. Each product is listed on a separate card. All quantities purchased over an extended time are recorded, and with each succeeding purchase these are reviewed to determine whether a bulk purchase is advisable, ordering points can be gauged and price fluctuations may be observed.

(See illustration No. 1)

It should be pointed out that factors such as storage facilities available, cost of storage, inventory investment, change in markets, spoilage of drugs and financial position of the hospital effect the pharmacist's choice of quantities purchased.

In the latter, as an example, in our institution an offering on five month's supply on an antibiotic entailed an economy of $6,000. It had to be purchased in one lot yet the cost for this order would seriously undermine the current operating funds available. The pharmacist in an instance such as this should check with controller, the purchasing agent and administration to determine the real advisability of placing such an order.

It has been determined that costs for storage space, charges for handling, record keeping and losses through obsolescence and spoilage of drugs amount to 10% of the value of an inventory during a given period. Thus, if the hospital pharmacy has a current inventory of $15,000, $1,500 can be kept in mind as additional cost. It points clearly to the fact that if the pharmacy overstocks or overbuys the expense of the pharmacy operation is raised 10%. Inventory and storage control is a necessity to assure buying proper quantities.

Periodic inventory should be taken. For the hospital pharmacist it can be simplified by using master inventory sheets listing all drugs, identifying standard shelf spaces, and projecting each inventory quantity taken, along a line provided for each individual stock item. By experience, that method of inventory taking has saved institutional pharmacists 1/3 the time normally required. Recording devices such as the dictaphone or sound scriber can be used as another method of saving time in inventory taking.

Having taken the inventory, if the master sheet form is followed one can analyze the movement of stock and if stationary over a period of time by comparison with the tabulation from past inventories on the same sheet, inactive or old stocks can be deleted.

It has been stated that perpetual inventories are not applicable to hospital pharmacy. However, if one reviews stock in a pharmacy, it will be seen that the items making up the bulk (as much as 60%) of the inventory value are in easily identifiable, small numerical units whose per unit cost is high. This involves a small number of items yet make the bulk of the inventory value. Such materials X-ray diagnostics, antibiotics, biologicals and certain injectables. A perpetual inventory of these is easily kept, simple to handle and assures the purchase of the right quantity.

With the aid of a standard disbursement sheet and the accounting office assistance, inventory can actually be perpetual in the pharmacy. All disbursements can be tabulated by using this form and deducted from the monetary value of purchases and previous inventory, to arrive at the value of the pharmacy inventory at any one time. In some hospitals, the inventory value is kept current with this device where costs are noted on the master tabulation sheet, prescription dispensing involves noting both the cost and charge price. The costs are then deducted. Standard disbursement sheets are noted:

(See illustrations No. 2 and 3)

How can one achieve stores control in hospital pharmacy? Pharmacy stock can be piled in units, with colored markers to denote the layers at a glance. Special markers, stars, or even gummed stickers can indicate order points. Lines on drums or kegs can be drawn on reorder levels as the material is received. Bin tags or shelf notations can indicate minimum (reorder level) and maximum (correct quantity to be ordered) units. Responsibility for weekly review of stock can be delegated to personnel in a large hospital pharmacy, with one pharmacist checking ampuls, another tablets, another chemicals all checked against levels as noted on the shelf tags. Want lists of a blackboard

38 F. R-38 ( ) U.P.INC. 9-55

DATE NO. PTS. APPROVALS

Grace-New Haven Community Hospital

ACCT. NO. DIVISION OR CLINIC By NURSE IN CHARGE

☐ Replacement Loss
☐ Increase in Standard

Amt.	Unit	
	1	Aminophyllin 20.cc - 0.5 Gm
	1	B-Vitamin (Thiamin), 10.cc - 0.5 Gm
	10	B-Complex Vitamin
	10	Bromsulphalein, 3.cc - 0.050 Gm per cc
	10	Caffeine Sod. Benzoate, 2.cc - 0.5 Gm
	1	Calcium Chloride, 10.cc - 1. Gm
	1	CalcGluconate(Neo-Calglucon)10.cc-10%
	10	C-Vitamin (Ascorbic Acid), 2.cc
	1	Dextrose, 50.cc - 50%
	10	Digitalis (Digifoline), 2.cc - 1 Unit
	10	Ephedrine, 1.cc - 0.05 Gm
	10	Epinephrine, 1.cc - 1:1000
	1	Epinephrine, 1 oz. - 1:1000
	10	Ergotrate, 1.cc - 0.0002 Gm
	10	Histamine Phosphate 1.cc - 1:1000
	1	Insulin - Zinc Crystalline - 10.cc - 1
	1	Insulin - Zinc Crystalline - 10.cc
	1	Insulin - Zinc Protamine - 1
	1	Insulin - Zinc P
	10	K-Vitamin, 1
	1	Liver Extr
	1	Magnesiu
	10	Mercu
	10	Nik
	10	

	Castor Oil
	Chloral Hydrate Sol. 0.6 Gm ea.
	Collodion Flexible
	Cuprex
	Deodorant Spra
	Eserine Ey
	Ether for
	Ferrou
	Flu

Illustration No. 2

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Grace-New Haven Community Hospital
789 Howard Avenue

38 N

Req. for Narcotics

☐ Increase in Standard

DATE NO. PTS. APPROVALS

Unit By

ACCT. NO. WARD OR CLINIC NURSE IN

Amt.	Unit	ITEM
	1oz	Cocaine Solution 5%
	1oz	Cocaine Solution 10%
	1oz	Cocaine Solution 20%
	20	Codeine Tablets Oral 0.008 G
	20	Codeine Tablets Oral 0.015
	20	Codeine Tablets Oral 0.0
	20	Codeine Tablets Hyp
	20	Codeine Tablets
	20	Demerol Tab
	1oz	Demerol A
XXXXXXXXXXXXXXX		
	20	Dilaudi
	20	Dilau
	20	M
	20	

Illustration No. 3

type can be placed strategically among storage facilities. Large units such as drums and multiple cartons can be kept in hospital stores, chargeable to that inventory and withdrawn as needed. Reorder points and specifications are drawn up between the purchasing agent and pharmacist, where the hospital stores can then be delegated the responsibility of a perpetual inventory on those items and maintenance of stock.

DETERMINATION OF THE RIGHT SOURCE

Two factors involved with buying from the right source include the right quality and the right price. The first has been discussed and the other will be detailed later. However, other factors apply.

Reference to drug lists such as the manufacturer's trade catalogs, the Red and Blue Book drug listings and the use of Gutman's Modern Drug Encyclopedia lists sources of a drug manufactured by numerous suppliers.

Bulk chemicals, prime sources of raw materials and equipment can be found in listings such as found in the Green Book of Oil, Paint and Drug Reporter Magazine published by Schnell Publishing Company, Drug and Cosmetic Review directories published annually, and trade catalogs of kitchen or restaurant supply houses, when in the latter instance equipment is desired.

One should not overlook the value of advertisements, not only in such pharmaceutical magazines as reach the retail pharmacist, but manufacturer's periodicals such as the Drug and Cosmetic Magazine and the Oil, Paint and Drug Reporter Magazine.

In these times, surplus offerings can be found in the Journal of Commerce if one can buy in bulk.

Salesmen or detail men, of course, are sources of information not to be overlooked, and most pharmacists resort to this practice as the easiest method.

In addition to salesmen, pharmacists generally refer to local wholesale suppliers of drugs which in instances of small quantity buying is justified. If convenience, prompt service, lower transportation cost and above all good local public relations (a necessity for a community institution) offset any economies gained from other sources then the wholesale house locally deserves the attention it derives.

BUYING AT THE RIGHT PRICE

A more reasonable price is a major consideration in the purchase of a drug, but determining a price that is "right" involves several factors.

A low price from a distant supplier may be outweighed by packing and transportation costs. Invoices should be carefully reviewed for this factor.

So-called special "deals" for large quantity purchases or "tie-in" purchases may be outweighed by expense of handling and storage, overbuying and increase of obsolescent stocks. Fortunately, this method of selling is now open to question. For hospital pharmacists, the experience has generally been that a direct discount would be more advantageous and minimize the hospital accounting expense involved.

Cooperative buying by hospitals within an area is being more closely investigated. Whenever a hospital purchasing bureau is established in an area it is wise to consult the person delegated to pharmaceuticals. Generally, the pharmacy section is not developed to the extent it should be except in one or two instances.

Negotiation with the seller often will engender the right price especially in instances of high volume purchases. It must be borne in mind that the local company representative be he "detail man" or "professional representative" is seldom privileged to negotiate without reference to his superiors. The average pharmacist is not skilled in this phase. Refer such problems to the hospital purchasing agent who will often obtain a price advantage.

The use of competitive bidding develops the right price but pharmacists tend to avoid this device that is used as a factor in good purchasing. Inviting bids for analysis and comparison will develop an advantageous price simply because a seller may be anxious to capture a new customer or the prestige his product will achieve in an area with its use in the local hospital. Invitations should seldom exceed five or six suppliers unless an initial exhaustive research is intended. Low bids should be viewed with suspicion if the difference is unusually large when compared to the others, and should be confirmed by sample submission. Bidding should not be used as a weapon but by a study of submissions the institution may wish to divide the business even in the face of a price differential. Prices obtained through competitive bidding should always be held confidential.

The pharmacist and purchasing agent should cooperate in releasing the contract and develop a policy whereby price is not the sole factor in a choice.

By reference to news sources of market trends or new process development such as found in the Drug and Cosmetic Industry Magazine and the Oil, Paint and Drug Reporter, the pharmacist can judge anticipated price advances or declines. There is usually a time lag before the hospital pharmacist will be subjected to a change in price from the basic market quotation. He can then develop his own interpretation to his volume demands.

Economy through standardization is easily done in a hospital pharmacy. Standardization of products through the use of a Pharmacy Committee, supported by the Medical Board creates volume. Volume places one in the advantage of better prices and direct purchase justification.

Finally, prices are determined by consideration of materials plus production cost plus overhead plus a profit. The pharmacist considering this may decide "to make" instead of "to buy." From the formula he can only eliminate the factor of profit and the overhead factor of distribution. Unless he considers his labor costs and uses good judgement on the value of his controls, any price advantage he may create with "procurement by manufacturing" to promote the right price will be offset.

CONCLUSIONS

The basis of being able to buy drugs for the hospital wisely is reference to a simplified record, noting each purchase of an item in a tabulated form. Sources are noted, quantity demands are listed over an extended period and price fluctuations easily discerned.

Added factors increasing costs and minimizing good methods in purchasing are the actual cost of purchase order mechanism, expediting by use of telegrams and phone calls, lost discounts through poor liaison with accounting departments and a high incidence of rush or emergency orders.

In ten years the cost per patient day for drugs (disallowing revenue factors) has risen 500%. The hospital pharmacist should review his methods at an early date. The barest investigation should disclose practices based on habit rather than on good principles.

If modified where necessary, new methods will save the pharmacist's time, promote economies for the hospital, satisfy the medical staffs requirements and provide uninterrupted good service to to the patient.

$ Economics of Manufacturing in a 100-Bed Institution $*

J. R. Cathcart
Chester County Hospital
West Chester, Pa.

The pharmacist in a small hospital must by necessity be well versed in manufacturing as he must lean upon this as his very financial lifeblood. It is quite surprising to see how few hospital pharmacists or administrators realize the potentiality of the training now given in a school of pharmacy and the wealth of literature presented in current professional journals and at institutes such as this. To be an asset to his institution rests entirely with the pharmacist himself and he must sell himself and his abilities to the institution just as surely as an agent must sell his professional wares. The equipment must be present in order that an efficient administration of the pharmacists' time be shown and in order that the preparation meets with the approval of the medical staff. But let us be specific and not talk in generalities, but demonstrate with actual facts.

The first step the successful pharmacist must take is in the proper recording of facts to enable him to accurately foresee what his cost is on the item and what his equipment to manufacture the same would be. If you will look at your sheet, you will see published here a few items exactly as I looked at them on my books with a mind at manufacturing the preparation (Fig. 1). Now an administrator, as you all know, is primarily trained at business methods in saving; in short, he is a successful horse trader and that is exactly where we have to pin him down by showing him it is good business to purchase the equipment needed. Now, a mixer needed to mix 9 gallons of this back lotion cost at that time $100.00 and that is, of course, 72 pints. The cost to make a pint of this preparation was calculated at $.12 or a gross saving of $.38 a pint, so on each batch the actual saving was to be $27.36. This, of course, did not pay for the pharmacist's labor nor did it pay for the bottles but, nevertheless, it was calculated that it could be made in 1 hour (in fact at a check under actual conditions, it was made in 45 minutes). So, if you stop to consider this matter even without the bottle (which can be used over again), the pharmacist was making very good money for the institution. As you might guess, the administrator backed the department in

PURCHASED FROM	Date	Received Quantity	Price	Amount
XXXXXXXX	5/19/43	36	$0.55/pt	$19.80
XXXXXXXX	8/20/43	144	0.50/pt	71.28
XXXXXXXX	3/23/44	144		71.28
XXXXXXXX	11/ 2/44	96		52.80
XXXXXXXX	2/17/45	96		52.80
XXXXXXXX	5/ 5/45	144		71.28

Item 16 oz. BACK LOTION

Equipment Needed 1-10 Gal. high speed Mixer Cost $125.

Stearic Acid	400 Gm
Cetyl Alcohol	300 Gm
Wool Fat	2100 Gm
Propylene Glycol	2240 Gm
*Inventol	600 cc
Menthol	42 Gm
Triethanolamine	588 cc
Water qs ad	36000 cc

Cost of above per pt. 12¢ to purchase equivalent 50¢ - Saving per pint 38¢

*Inventol is a high grade expressed nut oil from Magnus, Mabee & Reynard Inc.

Fig. I

*Presented at the Third Institute on Hospital Pharmacy, Princeton, N. J., June 28 - July 2, 1948.

the purchase of the needed equipment which can be used for a number of purposes other than the lotion. Among these preparations are hand lotion, aluminum hydroxide gel, and others. Unfortunately, not all products pay such a high rate of interest on money invested but upon analysis of one year's figures, it was shown to be on an average of $9.48 per manufacturing hour. This I have used as an example as our approach to the administrator toward the purchase of needed equipment. Equipment itself is not enough and capable help is a must if the scheme is to be financially successful and not give the pharmacist a nervous breakdown. Too often the pharmacist of the small hospital is expected to pick up and deliver drug baskets, fill all the orders, do the purchasing, wash the dirty bottles, unpack merchandise, clean the floor, shelves, etc., which leaves him no time to study the actual problems of his training, which should consist of the best preparations to purchase, notifying the staff of new and important preparations, proper distribution of his pharmaceuticals, manufacturing control, etc. In short, the institution is "penny wise" and "pound foolish." You cannot afford to pay a man two or three dollars per hour to do menial tasks. There is no reason why the pharmacist in a small institution should not have an executive position if the department is to function at its highest efficiency. Again the initiative must be taken by the pharmacist himself in order to get sufficient help.

To give a concrete example, upon arriving from the first institute at Ann Arbor, like the rest who attended that institute, I came home bubbling with enthusiasm over what I had seen and learned. There we were shown a method of diluting penicillin en masse, which was our particular need as we were using at that time up to 100 vials of penicillin per week which meant 100 syringes to be cleaned by Central Service just for dilution alone. I went to whom I considered one of the most efficient nurses, gave her a vial of penicillin and asked her to dilute it. This entailed walking to Central Service, getting a syringe, coming back to the floor, filing an ampul of salt and going through the procedure. By actual stop watch measurement, this took 5 minutes, multiplying this by approximately 100 vials, meant over 8 hours of nursing time lost per week in dilution alone and not even calculating the time wasted in the preparation of a sterile syringe plus the fact that 100 ampules of normal saline cost the institution at that time $14.00. Now, mind you, here was over 8 hours of nursing time and $14.00 per week being lost from the institution. According to rough calculations, our time should be about 2 minutes en masse. The nursing situation then, as now, being critical, the administrator was approached on hiring an additional member to the pharmacy staff in order to save nursing time and the $14.00. A very efficient girl was hired without any particular training in this field and after a very short time mastered the technique successfully; so successfully in fact, that the actual time was 1 minute per vial. She was then able to devote much of her time in other manufacturing procedures. We do not hesitate to point out to the Director of Nurses, the nursing time that was saved in the pharmacy and thereby were able to secure the complete cooperation of the nursing staff which is so essential to the success of the pharmacy. (Fig. II)

PURCHASED FROM	Date	Received Quantity		Amount
XXXXXXXX	1/16/46	400/20cc	Amp	$43.20
XXXXXXXX	2/28/46	100/20cc	"	14.00
XXXXXXXX	3/ 1/46	500/20cc	"	54.00
XXXXXXXX	4/25/46	100/20cc	"	14.00
XXXXXXXX	4/10/46	500/20cc	"	54.00
XXXXXXXX	7/ 2/46	100/20cc	"	14.00
XXXXXXXX	7/30/46	100/20cc	"	14.00
XXXXXXXX	8/28/46	400/100cc	"	180.00
XXXXXXXX	2/24/47	100/20cc	"	14.00
XXXXXXXX	8/28/47	25/10cc	"	3.27
XXXXXXXX	10/21/47	100/10cc	"	7.80
XXXXXXXX	1/12/48	100/10cc	"	7.80

Unit Amp. Normal Saline

Fig. II

It was at this time we really went into production on a large scale. This was made possible with sufficient help. Our records were then kept in better order and our savings increased. We also began to keep the record book as illustrated on your sheet. At the end of each month an analysis was made of these figures which, as you might guess, impressed the administrator as to the value of sufficient help and equipment. At the end of 12 months, an analysis was made and the figures showed the following:

Equivalent	$5,888.42		
Cost	553.82		
Gross Profit	5,334.60		
Time	552.88 x 2	=	1105.76
Net Profit	4,228.84		
Per hour	5,334.60	=	9.64
	552.88		

Manufacturing Record Sheet

Date	Name of Prep.	Size & Unit	Time	Cost	Equivalent (If purchased)

It was from these figures that the entire pharmacy staff was granted a raise in salary. I must admit that these figures were kept with an eye to the increase in salary but not only did we gain in salary but also in prestige, as we were then able to prepare almost any preparation we might be asked to make. Our dermatologist felt the cost was too high to supply his clinic patients with a patented coal tar preparation put up in a greaseless base. By checking back in the Journal of the A. Ph. A., Practical Pharmacy Edition, Volume V, page 177, (Fig. III) we found a formula recommended by Dr. Guy whose name was, of course, recognized by our dermatologist. We then compounded this using the U.S.P. Greaseless Ointment Base and prepared the preparation listed on your sheet. I might mention here that our approach to the physician in a change in preparation to one of our own make is to first read all available literature concerning the subject. As reference material, we keep bound copies of both the Scientific and Practical Journals of the A. Ph. A., THE BULLETIN and The American Professional Pharmacist. These books are kept in the pharmacy itself and it is quite surprising to find how many preparations in popular use today have been published about 2 or 3 years ago in these journals. In short, these journals are often a year or more ahead of the times. Also, much use is made of the hospital library and we draw heavily upon the A.M.A. Journal. When this primary study is made, we then approach the proper party with authoritative material not only as to who recommends it but also the financial aspects, and also what it will save the patient and the hospital. Our success in this has been most gratifying and is attributed primarily to the fact that we quote authorities; i.e., Rimen, Guy, Spies and others.

SYNTHETIC COAL TAR

Anthracene	1.10 Gm	@ .35 oz.	.038
Naphthalene	10.90	@ .25 lb.	.015
Phenanthrene	4.00	@ .65 for 25 Gm.	.115
Carbazole	2.30	@ .45 for 25 Gm.	.015
Picolene	.58	@ .50 for 25 Gm.	.005
Pyridine	.58	@ .37 oz.	.005
Quinolene	.58	@ .50 for 25 Gm.	.005
Phenol	0.70	@ .22 per ½ lb.	.015
Cresol	.75	@ .57 lb.	.015
Petrolatum	qs ad		.060
		Total	.288

Time	.50 hr.
Materials	.58
Service	1.00
Container	.10
Overhead	.20
Total	1.88 lb.

Greaseless Base	1 lb. @ .80	.80
Synthetic Coal Tar	4% @1.88	.38
	Total	1.18

Time	.33 hr.
Service	.66
Material	2.36
Container	.10
Overhead	.26
Total	3.38

You will note I mentioned patient cost previously and some time should be spent here in showing our method of cost computation to the patient. If you will look at your sheet, you will see listed Suspension of Sulfadiazine. The service charge is based on full time for the pharmacist and half time for the assistants. With properly trained technicians, it is surprising how little time is required by the pharmacist to prepare certain basic solutions. For example, to make 24-1000 cc. sterile solution, it takes only 0.5 hours of the pharmacist's time, the remainder being technician's time. Time is then charged for the preparation at a rate of $2.00 per hour. The material is doubled to pay for higher inventory required. The container is charged at $.10. Overhead is based at 12% of the total of the service plus material and container.

Sulfadiazine Suspension

Sulfadiazine Pwd. 62.5 Gm. @ 3.40 lb.			1.76
Pectin 7 Gm. @ 1.95 lb			.02
Sodium Citrate .75 Gm. @ .29 lb.			.12
Benzaldehyde 0.2 Gm. @ 1.56 lb.			.01
Zephiran Sol. 1.0 @ 18.00 Gal.			.01
Syrup 500 cc @ .06 lb.			.05
Orange Flower Water 200 @ .71 pt.			.30
Distilled Water qs ad 1000 cc			
		Total	2.27

Time ½ hr.

Service	1.00		
Materials	4.54		
Container	.10		
Overhead	.68		
Total	6.32	Sell to patient	.25 oz.

Thus, we arrive at $6.32 per 1000 cc. as selling price to the patient. Actually this is sold at $.25 per ounce. Should we buy a current commercial preparation, it would cost us $.26 per ounce, thus charging it at fair trade the patient cost would be $.39 per ounce. Since this is sold at $.25 per ounce, it represents a sizeable saving to the patient. Upon analysis, we have served three ends. The physician is able to have the preparation he wishes, the hospital increases its profit and the patient saves money. If you will check on the actual cost

of ingredients, you will see the cost is $.07 per ounce selling at $.25 to the patient. We make for the hospital $.18 per ounce or in a 4 ounce prescription $.72. Should we have purchased a proprietary preparation, we would have made $.13 per ounce or on a 4 ounce prescription, $.52. Thus, you see the profit is sufficient to more than pay for labor etc. and we must remember that the patient has saved too. Here the pharmacy has promoted good patient hospital relations which makes it a credit to the institution.

Since the pharmacist has time to do studies on new and needed preparations, I was able to have available for our doctors, a soluble para aminobenzoic acid long before one was available on the market. West Chester, being a hot bed for Rocky Mountain spotted fever, (we having the dubious honor of having the first case in the East) we began to use p-aminobenzoic acid which due to its acid reaction caused nausea but was effective in treatment. By reacting 86 grams of PABA with

Solution Sodium Salt of p-Aminobenzoic acid	
p-Aminobenzoic Acid	86 Gm.
Sodium Bicarbonate	53.
Water	370.00
Apply gentle heat to start reaction	
Makes 420 cc of a 24% solution.	
Flavor with oil peppermint	
Must be freshly prepared.	

53 grams of sodium bicarbonate plus heat and water, we prepared a liquid containing 25% sodium PABA which when flavored with oil of peppermint makes a much more successful preparation. It was almost a year before a tablet of sodium PABA was on the market. We have also prepared an injectible solution for those cases which cannot take the above by mouth. As far as I know, we are the only hospital which has this in stock. Should you be interested in this preparation, you will find its formula in The Year Book of Medicine for 1947.

The savings made through manufacturing reach fantastic proportions when tax free alcohol is used. The hospital has a unique position in this matter as we are currently paying $1.09 per gallon, while the retail pharmacist is paying $23.75 in Pennsylvania for the same amount. As an example, look on your sheet as to the cost of manufacturing elixir terpin hydrate with codeine. An effort is made to manufacture all U.S.P. and N.F. preparations in the pharmacy if it is profitable to do so. To date, the only liquid preparation it did not pay us to make was citrate of magnesia as it can be purchased at such a low price. As we do not have a milling machine, we also find it cheaper to purchase a number of U.S.P. ointments such as zinc oxide and ammoniated mercury.

Elixir Terpin Hydrate with Codeine				
Codeine Alkaloid	40 Gm.	@	12.02 per oz.	16.03
Terpin Hydrate	340 Gm.	@	.92 lb.	.70
Tr. Orange	400 cc	@	1.50 Gal.	.15
Spr. Benzaldehyde	100cc	@	.43 qt.	.04
Alcohol 8500 cc		@	1.09 Gal.	2.35
Glycerine 8000 cc		@	4.20 Gal.	8.40
Syrup	2000 cc	@	.08 lb sugar	.35
Total 5 gal. cost				28.02
Time 1 hr.				
National Known Manufacturer 5 gal.				78.00

We have, in the pharmacy, a Stokes Eureka tablet machine but do not advocate the manufacture of tablets in the small hospital pharmacy as the time consumed is too great. We at present manufacture only tablets acetylsalicylic acid, as it is possible to purchase the granulation for this preparation. The secret of successful tablet manufacturing lies in the proper granulation. Our greatest saving perhaps is tax free alcohol preparation specialties, and injectible solutions.

To summarize the success of the small hospital pharmacy rests in the following:

1. Know the answers by reading current literature, THE BULLETIN, both Journals of the A.Ph.A., the American Professional Pharmacist, A.M.A. Journal, etc.
2. Keep accurate records of purchases.
3. Know sources of supply. The Buyers Guidebook Number of Chemical Industries @ $2.50 is an excellent source of basic manufactures.
4. Know the cost of equipment.
5. Keep time and motion studies.
6. Do not hesitate to tell your administrator, nursing director, nurses, public, etc. exactly what a good pharmacy means to them.
7. Keep accurate records of what is manufactured and the amount of money saved for the institution.
8. Attend all institutes.
9. Sell yourself and your department. Do not waste your valuable time with menial tasks. Your institution can not afford to pay a high price for a janitor.
10. Hire technicians for routine jobs.

Ophthalmic Medications*

By Milton W. Skolaut**

A Review of Present Concepts in the Preparation of Ophthalmic Solutions - Formulas Included

Ophthalmic solutions have given rise to countless problems since their introduction into the fields of pharmacy and medicine. The problem of stability probably was the first to be attacked. Hundreds of formulas have been suggested combining a great number of preservatives and stabilizing agents. However, there have been no formulas published to date which will prevent the deterioration of various alkaloidal salts and other chemicals used in these solutions. In this paper, formulas are given which have produced satisfactory solutions for a period of weeks but there will still be deterioration. Appreciable deterioration should not occur until long after the patient's medication has been consumed, provided not more than a month's supply is dispensed at one time.

The second problem, and the most important in hospitals, is contamination of solutions by fungi and bacteria. This problem will be the major consideration in this discussion.

The number of preservatives or antiseptics used in ophthalmic solutions have been numerous. One which has been highly regarded as an antiseptic is boric acid. It retards the growth of micro-organisms for a limited period of time but will not destroy them. Boric acid is used in formulas appearing later, not as an antiseptic but as a buffer.

Various esters of benzoic acid have been tested and recommended by Hasler (1). Arrigoni, et al (2) advocated the use of a combination of methyl and propyl-p-hydroxybenzoate. These esters are effective in retarding the growth of fungi but do not inhibit bacteria.

Another means of preserving ophthalmic solutions has been to autoclave them in rubber capped vials. A sterile syringe and needle were used to withdraw the required amount. This method is very slow and tedious and, therefore, cannot be used in an institution where a large number of patients are to be treated. Also, the temperature of autoclaving causes marked deterioration if alkaloidal salts are present.

The practice followed in the operating rooms of the Wilmer Ophthalmological Institute of The Johns Hopkins Hospital for a number of years has been to use benzoic acid esters as preservatives and also to autoclave the solutions every seven days. Investigation revealed that after the solutions had been subjected to two autoclavings, their potency had been so reduced that they were unsuited for use and were discarded. Such a practice not only resulted in a considerable economic loss, but even more important, it did not maintain the solutions in a sterile condition. Bacteria were present which made the solutions actually dangerous. Undoubtedly, contaminated ophthalmic solutions have been the cause of many infections in many hospitals and the need for sterile products cannot be overemphasized.

What should be the properties of the ideal ophthalmic solution? First, it should be free of micro-organisms and it should remain so for a reasonable length of time. Second, it should be non-irritating. Third, it should be stable. Fourth, the solution should possess optimum activity.

In this work, benzalkonium chloride* was used to preserve the solutions. This compound is well suited for ophthalmic solutions and it is non-irritating to the eye in concentrations of 1:3000. It is active even after high dilution by the tears.

Benzalkonium chloride is stable and retains its activity indefinitely. It is unaffected by freezing or boiling. Chemically, it is compatible with most ophthalmic drugs. Exceptions worthy of note are boric acid in concentrations approaching saturation, mild silver protein, pilocarpine nitrate, silver nitrate, sulfathiazole sodium and fluorescein sodium.

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*Presented by Dr. W. Arthur Purdum at the Third Institute on Hospital Pharmacy, Princeton, N. J., June 28 - July 2, 1948.

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*Zephiran Chloride, a brand of Benzalkonium Chloride manufactured by Winthrop-Stearns, Inc., was used throughout this work.

The germicide used should be capable of destroying pathogenic microbes and must kill them quickly. Thompson, et al (4) in a recent investigation found that benzalkonium chloride solution destroyed staphylococcus aureus completely in less than one second. Under the same conditions, iodine, several mercurials, and chlorine preparations destroyed only a fraction of the organisms within five minutes.

Solutions of benzalkonium chloride, by virtue of their low surface tension, increase the permeability of the corneal membrane and promote a more rapid onset of action of other drugs present in the solutions. The surface tension of distilled water is 72.75 dynes per cm. whereas that for a 1:1000 solution of benzalkonium chloride is 37.39 dynes per cm. and that for a 1:10,000 solution is 39.09 (3). This explains why O'Brien and Swan (6) employed a 1:3000 solution of benzalkonium chloride in their work with carbamylcholine chloride. They found that through increased permeability of the corneal membrane, absorption of the drug was made more consistent.

The choice of buffers is large and pH of the solutions can vary over a wide range. The best known and probably most frequently used buffers were developed by Gifford and Smith (6). These have been quite satisfactory but they are not compatible with benzalkonium chloride solution and therefore, other buffers had to be used. Arrigoni and Tozer (7) have developed a buffer consisting of monobasic potassium phosphate and dibasic sodium phosphate.

A precipitate of free base has been observed in certain solutions, such as those of epinephrine, cocaine and tetracaine when adjusted to a pH of 7.4. The resulting preparations are very irritating and cause a burning sensation due to the high concentration of free base. When the pH of these solutions is lowered, a more chemically stable solution is obtained and the therapeutic activity, while not at its optimal level, is satisfactory. Also, irritation is reduced and the burning sensation accompanying a pH of 7.4 is greatly lessened.

The administration of drugs in isotonic sodium chloride solution is not satisfactory. This may be due to the immediate raising of the pH of the solution when instilled into the eye due to the higher pH of the lacrimal fluid. Adjustment of the pH to 5 by the addition of a weak acid retards the rise in pH when mixed with lacrimal fluid, permits the slow liberation of the free base for absorption, and lessens discomfort to the patient. Boric acid is ideal for this purpose (8).

The effect of pH on ophthalmic solutions is of great importance. Aqueous solutions of most alkaloidal salts are most stable at a pH of from 2 to 3 and they undergo hydrolysis and decomposition at a pH of 7 to 7.4, which is the level required for optimum activity. A pH level of 6.5 is satisfactory for buffering some ophthalmic drugs while others must be buffered at a pH of near 5. Solutions of certain alkaloids, notably those of atropine, homatropine, pilocarpine and eucatropine have been made employing a phosphate buffer mixture and adjusted to a pH between 6 and 6.8. In this range, there was only from 10 to 20 per cent deterioration in 30 days. An increase in pH is accompanied by a corresponding increase in the concentration of free base resulting in increased physiological activity (8).

Since it is well known that solutions of alkaloidal salts at a pH of 7 or above lose from half to all of their activity in a period of about one month, it follows, therefore, that a compromise between chemical stability and physiological activity should be effected by buffering within the limits of pH 6 to 6.8. In this work, a buffer of sodium acid phosphate and disodium phosphate as used by Hind and Goyan (8) was chosen.

It has been generally accepted that a 1.4 per cent solution of sodium chloride is isotonic with lacrimal fluid. However, all solutions given herein are based upon a 0.9% solution of sodium chloride as having the correct osmotic concentration (9). In some of the concentrated solutions a hypertonic solution had to be made. It has been found that the eye can tolerate solutions covering a wide range of osmotic pressures when the pH is controlled. Also, the eye can tolerate without apparent irritation or discomfort solutions having a wide range of pH values, provided the osmotic pressure is controlled (10).

McPherson and Wood (11) have shown that ophthalmic solutions can be maintained in a sterile condition by the addition of benzalkonium chloride. Solutions of the ophthalmic drugs were prepared in distilled water alone, in distilled water containing benzalkonium chloride and in phosphate buffer containing benzalkonium chloride. The solutions which did not contain benzalkonium chloride were sterilized by autoclaving at 15 pounds pressure for 20 minutes before the addition of test organisms.

To a 3 cc. sample of each solution was added one drop of an actively growing 24 hour broth culture. Subcultures were taken at intervals of 2, 5, 10, 15 and 30 minutes and planted in trypticase soy broth using a one millimeter platinum loop. After an incubation period of 48 hours the subcultures were examined for evidence of growth and the results recorded (11).

The first experiment consisted of contaminating sterile solutions of eight commonly used ophthalmic drugs prepared in distilled water with E. coli, B. pyocyaneus and staphylococcus aureus. As a control, sterile distilled water was similarly contaminated. The results follow in Table I.

TABLE I
SURVIVAL TIME OF ORGANISMS IN SOLUTIONS PREPARED IN STERILE DISTILLED WATER (11)

Organisms	COLI				PYOCYANEUS				STAPHYLOCOCCUS			
Time in Minutes	2	5	15	30	2	5	15	30	2	5	15	30
Eucatropine Hydrochloride 5%	+	+	+	+	+	+	-	-	+	+	+	+
Cocaine Hydrochloride 4%	+	+	+	+	-	-	-	-	+	+	+	+
Pilocarpine Hydrochloride 2%	+	+	+	+	+	+	+	+	+	+	+	+
Atropine Sulfate 1%	+	+	+	+	+	+	+	+	+	+	+	+
Tetracaine Hydrochloride 5%	-	-	-	-	-	-	-	-	+	+	+	+
Scopolamine Hydrobromide 1/4%	+	+	+	+	+	+	+	+	+	+	+	+
Eserine Sulfate 1/4%	+	+	+	+	+	+	+	+	+	+	+	+
Homatropine Hydrobromide 2%	+	+	+	+	+	+	+	+	+	+	+	+
Distilled Water	+	+	+	+	+	+	+	+	+	+	+	+

Organisms survived regularly for thirty minutes in most solutions. The coli and pyocyaneus bacilli failed to survive in tetracaine solution 0.5%. This was probably due to the fact that the tetracaine used contained acetone sodium bisulfite as a preservative (11).

The second experiment consisted of contaminating solutions of the same eight drugs prepared in distilled water containing benzalkonium chloride. Distilled water containing benzalkonium chloride was used as a control and no solutions were autoclaved. The results follow in Table II.

TABLE II
SURVIVAL TIME OF ORGANISMS IN SOLUTIONS PREPARED IN DISTILLED WATER CONTAINING BENZALKONIUM 1:5000 (11)

Organisms	COLI				PYOCYANEUS				STAPHYLOCOCCUS			
Time in Minutes	2	5	10	15	2	5	10	15	2	5	10	15
Eucatropine Hydrochloride 5%	-	-	-	-	-	-	-	-	-	-	-	-
Cocaine Hydrochloride 4%	-	-	-	-	-	-	-	-	-	-	-	-
Pilocarpine Hydrochloride 2%	-	-	-	-	-	-	-	-	-	-	-	-
Atropine Sulfate 1%	-	-	-	-	-	-	-	-	-	-	-	-
Tetracaine Hydrochloride 5%	-	-	-	-	-	-	-	-	-	-	-	-
Scopolamine Hydrobromide 1/4%	-	-	-	-	-	-	-	-	-	-	-	-
Eserine Sulfate 1/4%	-	-	-	-	-	-	-	-	-	-	-	-
Homatropine Hydrobromide 2%	-	-	-	-	-	-	-	-	-	-	-	-
Benzalkonium 1:5000	-	-	-	-	-	-	-	-	-	-	-	-

The third experiment consisted of contaminating seven ophthalmic solutions containing buffers and benzalkonium chloride. The phosphate buffer control containing no benzalkonium chloride was autoclaved prior to contamination. The results follow in Table III.

TABLE III

SURVIVAL TIME OF ORGANISMS IN SOLUTIONS PREPARED IN PHOSPHATE BUFFERS CONTAINING BENZALKONIUM 1:5000 (11)

Organisms	COLI				PYOCYANEUS				STAPHYLOCOCCUS			
Time in Minutes	2	5	10	15	2	5	10	15	2	5	10	15
Eucatropine Hydrochloride 5%	-	-	-	-	-	-	-	-	-	-	-	-
Cocaine Hydrochloride 4%	-	-	-	-	-	-	-	-	-	-	-	-
Pilocarpine Hydrochloride 2%	-	-	-	-	-	-	-	-	-	-	-	-
Atropine Sulfate 1%	-	-	-	-	-	-	-	-	-	-	-	-
Tetracaine Hydrochloride 5%	-	-	-	-	-	-	-	-	-	-	-	-
Scopolamine Hydrobromide 1/4%	-	-	-	-	-	-	-	-	-	-	-	-
Homatropine Hydrobromide 2%	-	-	-	-	-	-	-	-	-	-	-	-
Buffer and Benzalkonium 1:5000	-	-	-	-	-	-	-	-	-	-	-	-
Buffer Alone	+	+	+	+	+	+	+	+	+	+	+	+

From these results it is apparent that the phosphate buffers do not interfere with the germicidal activity of benzalkonium chloride.

Formulas for Sterile Ophthalmic Solutions

ACETATE BUFFER SOLUTION

1.	Acetic Acid	25 cc.
2.	Sodium Acetate	30 Gm.
3.	Sodium Chloride	45 Gm.
4.	Benzalkonium Chloride Solution 1:5000 q.s.	1000 cc.

Dissolve 1, 2, and 3 in approximately 700 cc. of distilled water. Add sufficient Benzalkonium Chloride solution to make a 1:5000 dilution in the full volume and add sufficient distilled water to make 1000 cc.

* * *

ATROPINE SULFATE SOLUTION 0.5%

1.	Atropine Sulfate	5 Gm.
2.	Sodium Acid Phosphate, Anhydrous	4 Gm.
3.	Disodium Phosphate, Anhydrous	4.7 Gm.
4.	Sodium Chloride	4.1 Gm.
5.	Benzalkonium Chloride Solution 1:5000 q.s.	1000 cc.

* * *

ATROPINE SULFATE SOLUTION 1%

1. Atropine Sulfate	10	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	3.4	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

ATROPINE SULFATE SOLUTION 3%

1. Atropine Sulfate	30	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	0.6	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

COCAINE HYDROCHLORIDE SOLUTION 4%

(HYPERTONIC)

1. Cocaine Hydrochloride	40	Gm.
2. Boric Acid	5	Gm.
3. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

COCAINE HYDROCHLORIDE SOLUTION 10%

(HYPERTONIC)

1. Cocaine Hydrochloride	100	Gm.
2. Boric Acid	5	Gm.
3. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

EUCATROPINE HYDROCHLORIDE SOLUTION 5%

(HYPERTONIC)

1. Eucatropine Hydrochloride	50	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

FLUORESCEIN SODIUM SOLUTION 2%

1. Fluorescein Sodium	20	Gm.
2. Potassium Acid Phosphate	1.9	Gm.
3. Disodium Phosphate, Anhydrous	8.1	Gm.
4. Sodium Chloride	0.35	Gm.
5. Sodium Ethyl Mercuri Thiosalicylate Solution 1:5000 q.s.	1000	cc.

Fluorescein sodium is chemically incompatible with benzalkonium chloride, so sodium ethyl mercuri thiosalicylate* was used in its place.

Fluorescein is one of the best staining agents obtainable and probably the most widely used. Fluorescein sodium is used where an eye injury may be suspected and for this reason a contaminated solution can be dangerous. It is active as a staining agent in an alkaline medium and therefore the phosphate buffers of White and Vincent (14) having a pH of 7.4 were chosen. The fluorescein sodium solution prepared by this formula is not sterile. Before use it should be autoclaved and the sodium ethyl mercuri thiosalicylate present will keep it bacteriostatic for a month in many cases, again depending upon contaminants introduced by users.

* * *

HOMATROPINE HYDROBROMIDE SOLUTION 0.5%

1. Homatropine Hydrobromide	5	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	3.8	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

HOMATROPINE HYDROBROMIDE SOLUTION 1%

1. Homatropine Hydrobromide	10	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	2.9	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

*Sodium ethyl mercuri thiosalicylate is marketed under the trademark name of "Merthiolate Solution."

HOMATROPINE HYDROBROMIDE SOLUTION 2%

1. Homatropine Hydrobromide	20	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Acid Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	1	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

HOMATROPINE HYDROBROMIDE SOLUTION 5%

(HYPERTONIC)

1. Homatropine Hydrobromide	50	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

NEO-SYNEPHRINE SOLUTION 0.25%

1. Neo-Synephrine Hydrochloride Ophthalmic Solution 10%	4	cc.
2. Boric Acid	2.6	Gm.
3. Benzalkonium Chloride Solution 1:5000 q.s.	160	cc.

* * *

NEO-SYNEPHRINE SOLUTION 1%

1. Neo-Synephrine Hydrochloride Ophthalmic Solution 10%	4	cc.
2. Boric Acid	0.7	Gm.
3. Benzalkonium Chloride Solution 1:5000 q.s.	40	cc.

* * *

PENICILLIN SOLUTION 1000 UNITS PER cc.

1. Penicillin Sodium, Crystalline G (Unbuffered)	1,000,000	Units
2. Sodium Acid Phosphate Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	4	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

Penicillin solutions, adjusted to a pH between 6 and 6.5, are relatively stable (13). The solution above, stored at 10°C., will show no significant loss of potency over a period of two to four weeks. Penicillin buffered with sodium citrate must not be used due to the chemical incompatibility with benzalkonium chloride.

* * *

PHYSOSTIGMINE SULFATE SOLUTION 0.25%

1. Physostigmine Sulfate	2.5	Gm.
2. Boric Acid	13	Gm.
3. Sodium Bisulfite	1	Gm.
4. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

This solution will be stable for at least one month at room temperature. Exposure to higher temperatures, light and air hasten deterioration. The oxidation products of physostigime solution retain the physiological activity of physostigmine (12). Methylamine is one of the oxidation products, and probably accounts for the irritating properties accompanying the use of an unstabilized solution. Therefore, a pink solution of physostigmine should not be dispensed (8). Physostigmine salicylate is chemically incompatible with benzalkonium chloride.

* * *

PILOCARPINE HYDROCHLORIDE SOLUTION 0.5%

1. Pilocarpine Hydrochloride	5	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	3.7	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

PILOCARPINE HYDROCHLORIDE SOLUTION 1%

1. Pilocarpine Hydrochloride	10	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	2.6	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

PILOCARPINE HYDROCHLORIDE SOLUTION 2%

1. Pilocarpine Hydrochloride	20	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Sodium Chloride	0.4	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

PILOCARPINE HYDROCHLORIDE SOLUTION 5%

1. Pilocarpine Hydrochloride	50	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

PILOCARPINE HYDROCHLORIDE SOLUTION 7%

(HYPERTONIC)

1. Pilocarpine Hydrochloride	70	Gm.
2. Sodium Acid Phosphate, Anhydrous	4	Gm.
3. Disodium Phosphate, Anhydrous	4.7	Gm.
4. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

It is advisable to make pilocarpine solutions with the hydrochloride salt due to the incompatibility of the nitrate with benzalkonium chloride (15).

* * *

SCOPOLAMINE HYDROBROMIDE SOLUTION 0.25%

1. Scopolamine Hydrobromide	2.5	Gm.
2. Potassium Acid Phosphate	1.9	Gm.
3. Disodium Phosphate, Anhydrous	8.1	Gm.
4. Sodium Chloride	3.3	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

SCOPOLAMINE HYDROBROMIDE SOLUTION 0.5%

1. Scopolamine Hydrobromide	5	Gm.
2. Potassium Acid Phosphate	1.9	Gm.
3. Disodium Phosphate, Anhydrous	8.1	Gm.
4. Sodium Chloride	3	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

Scopolamine hydrobromide solutions containing benzalkonium chloride showed contamination with micro-organisms at a pH of 6.75. This was not true after adjusting the pH to 7.4.

* * *

TETRACAINE HYDROCHLORIDE SOLUTION 0.5%

1. Tetracaine Hydrochloride	5	Gm.
2. Potassium Acid Phosphate	4.3	Gm.
3. Disodium Phosphate, Anhydrous	5.7	Gm.
4. Sodium Chloride	3.4	Gm.
5. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

* * *

ZINC SULFATE SOLUTION 0.25%

1. Zinc Sulfate	2.5	Gm.
2. Boric Acid	15.6	Gm.
3. Benzalkonium Chloride Solution 1:5000 q.s.	1000	cc.

The present procedure in the Wilmer Institute follows: Fresh solutions are prepared every fourteen days for the operating room. They are not autoclaved, except the fluorescein, but are prepared with freshly distilled water. The solutions not used in this two week period are transferred to the wards to be used up. Experiments have shown that these solutions are sterile for longer than two weeks but the risk of contamination in an operating room makes this procedure mandatory.

* * *

CONCLUSIONS

1. Benzalkonium chloride in a concentration of 1:5000 maintains sterility in ophthalmic solutions for a limited time.
2. Solutions containing benzalkonium chloride need not be autoclaved, thereby preventing undue destruction by heat of other compounds present.
3. Benzalkonium chloride is not irritating to the eye in the concentration employed.
4. The solutions used were buffered with a consideration for stability and physiological activity.
5. The osmotic pressure, where possible, was adjusted to make the solutions approximately isotonic with lacrimal fluid.
6. Substantial financial savings may be gained through the use of these solutions as waste is reduced to a minimum.

REFERENCES

1. Hasler, W. T. J., Am. J. Opthalmol., 22:423 (1939).
2. Arrigoni, Louis, Tozer, G. A. and Fischer, Louis, Bull. Natl. Formulary Comm., 13:1 (1945).
3. Winthrop Chemical Co., Inc., Brochure.
4. Thompson, R., Isaacs, M. L. and Khorazo, D., Am. J. Ophthalmol., 20:1087 (1937).
5. O'Brien, C. S., and Swan, K. C., Arch. Opthalmol., 27:253 (1942).
6. Gifford and Smith, Arch. Opthalmol., Feb. 1933.
7. Arrigoni, Louis, Tozer, G. A., J. Am. Pharm. Assoc., Pract. Pharm. Ed., 7:292 (1946).
8. Hind, Harry W., Goyan Frank M., J. Am. Pharm. Assoc., 36:33 (1947).
9. Krogh, A., Lund, C. G. and Pedersen-Bjergaard, K., Acta Physiol. Scand., 10:88 (1945); C. A., 40:1921 (1946).
10. Hind, H. W., Society for the Advancement of Contact Lens Research, New York City. Proceedings of the Meeting of Oct. 1944 and May 1946.
11. McPherson, Samuel D., Jr. and Wood, Ronald M., Self-Sterilizing Opthalmic Solutions, to be published.
12. Gifford, S. R. and Smith, R. D., Arch. Ophthalmol., 9:227 (1933).
13. Molinas, Samuel and Welch, Henry, J. Am. Pharm. Assoc., 36: 41 (1947).
14. White, Allen I. and Vincent, Hugh C., J. Am. Pharm. Assoc., Pract. Pharm. Ed., 8:406 (1947).
15. Huyck, C. Lee and Davy, Edward D., J. Am. Pharm. Assoc., Pract. Pharm. Ed., 8:27 (1947).

INDUSTRIAL PHARMACY COURSE OFFERED AT ST. LOUIS COLLEGE OF PHARMACY

A fully equipped drug manufacturing laboratory is being assembled by the St. Louis College of Pharmacy, St. Louis, for use in the school's new course in industrial pharmacy, it has been announced by Dr. Arthur F. Schlichting, dean of the college. The course opens in September.

Included in the equipment, which will cost at least $35,000, are compressed tablet machines, mixing machines, granulators, tablet coating and polishing pans, colloid mills, homogenizers, pressure filters, ointment mills and other drug manufacturing equipment.

Dr. Schlichting said that students in the course will make various types of pharmaceutical products, including powders, tablets, ointments, creams, emulsions and pharmaceutical liquids. The students also will operate a packaging and labeling department. A member of the faculty staff will head a quality control section.

The manufacturing lab, which will cover about 3000 square feet, will be completed late in August and will be ready for use when the term begins. To help staff the new department, professors of pharmacy, chemistry and pharmacology will be added to the faculty.

Established to help relieve a shortage of trained personnel in the drug manufacturing field, the new department will provide a five-year course in industrial pharmacy. Graduates of the new course will receive a bachelor of science degree in industrial pharmacy.

The new department will also offer a one-year postgraduate course for regular pharmacy graduates. This industrial pharmacy course will also include a quality control section.

Third Institute on Hospital Pharmacy

Princeton, N. J.

June 28 - July 2, 1948

With a record attendance of 135 hospital pharmacists, the Third Institute on Hospital Pharmacy met at Princeton Inn, Princeton, New Jersey, during the week of June 28. Sponsored jointly by the American Hospital Association, the American Pharmaceutical Association and the American Society of Hospital Pharmacists, the Institute was designed to present in concentrated form a basic and integrated course by competent leaders in the field of pharmacy. The series of lectures and demonstrations dealt chiefly with hospital pharmacy administration, manufacturing procedures for non-sterile preparations, manufacture of parenteral medications, development of pharmacy in the governmental services and recent trends in the field of new drugs.

Meetings were held throughout each day followed by panel discussions at night with the faculty participating. During these sessions attendees at the institute were given an opportunity to present questions on the day's lectures. Of particular interest to those attending the institute was the panel discussion and demonstration on time-saving devices for the hospital pharmacy which was led by Mr. Herbert L. Flack, chief pharmacist at Jefferson Medical College Hospital in Philadelphia, on Wednesday night. Faculty members and attendees at the institute had brought slides or actual equipment and ingenious devices which are used in their hospital pharmacies as aids to better efficiency. This session proved of great value to the members of the institute and it is hoped that photographs of devices shown and additional information may be published in a forthcoming issue of THE BULLETIN.

Attendees at the institute came from 31 states, Canada and the Dutch West Indies. Included also in the Canadian delegation was a pharmacist from London, England, who is presently exchanging positions with a Canadian pharmacist. The registrants included 66 men, 32 Sisters, and 37 other women.

Pharmacists attending the Institute represented hospitals of all sizes and types. Most of the registrants came from non-profit general hospitals. However, present at this year's institute were representatives from government hospitals including seven registrants from U. S. Marine Hospitals and sixteen pharmacists from the Veterans Administration hospitals and branch offices. Only two pharmacists were from less than 100 bed hospital; twenty-three were from 100 - 199 bed hospitals; thirty-two were from 200 - 299 bed hospitals; eighteen were from 300 - 399 bed hospitals; and the remainder of the institute attendees were from hospitals over 400 beds, seven of which were from hospitals of more than 1,000 beds.

Opening the five day session on Monday afternoon, Dr. Robert P. Fischelis, Secretary of the American Pharmaceutical Association, brought greetings to the institute and introduced Dr. Robert W. Snoke, Director, Grace-New Haven Community Hospital, New Haven, Connecticut. Dr. Snoke brought greetings from the American Hospital Association and Mr. John Zugich, President of the American Society of Hospital Pharmacists welcomed the institute attendees on behalf of the Society. Also present for the opening meeting were Mr. Howard Johnston, Secretary of the New Jersey Hospital Association and Mr. Edward Thorne, retail pharmacist in Princeton. Mr. Leonard P. Goudy of the American Hospital Association staff was present throughout the week to carry out the details of the Institute.

As an introduction to hospital administration and planning, Dr. J. R. McGibony, Assistant Chief of the Hospital Facilities Division, U. S. Public Health Service, spoke on "Expansion of Hospital Facilities." He briefly outlined the provisions and

SOME OF THE FACULTY MEMBERS.....

McGibony

Fischelis

Goriup

Smith

Smith, Archambault, Purdum, Francke

Purdum

Zugich, Snoke

Zugich

Niemeyer, Cathcart

Lauve, Tennyson, Flack

Flack

Tennyson

present status of the Hospital Survey and Construction Act. He pointed out the part which hospital pharmacists may take in attaining better patient care in the nation's hospitals. He further emphasized the importance of good pharmacy service as a challenge to both health and economics.

To further orient the institute members on administrative problems in the hospital pharmacy, Dr. Snoke and Mr. John Zugich reviewed the general functions and policies of the pharmacy department. A question and answer period concerning administrative problems of both the hospital administrator and the hospital pharmacist proved helpful in acquainting the members of the institute relative to the scope of pharmacy service, purchasing, manufacturing, charges for medication, out-patient clinics, physical aspects and equipment.

Continuing the lectures on administrative problems on Tuesday morning Mr. Don Francke, Chief Pharmacist at University Hospital in Ann Arbor, Michigan, presented a discussion on "The Therapeutics Committee and the Hospital Formulary." Mr. Francke outlined the procedure for initiating a therapeutics committee in the hospital with the pharmacist serving as secretary. Discussing the steps in the preparation of a formulary, he displayed formularies now in use to depict typical page format and style.

Speaking on the teaching responsibilities of the hospital pharmacist, Mr. Herbert L. Flack, Chief Pharmacist at Jefferson Medical College Hospital in Philadelphia, presented a discussion of methods of teaching student nurses, graduate nurses and the medical staff. Illustrative material was distributed including samples of publications by hospital pharmacists for presenting current information to their medical staffs.

Illustrated lectures on "Planning the Hospital Pharmacy to Meet Modern Needs" and "Techniques for Promoting Efficiency in the Hospital Pharmacy" were presented by Mr. Harvey A. K. Whitney, formerly chief pharmacist at University Hospital in Ann Arbor, Michigan.

Highlighting the Tuesday lectures was a lecture on the role of the pharmacist in hospital narcotic control by Mr. A. L. Tennyson, Chief of the Narcotic Section of the General Counsel's Office of the Bureau of Narcotics. He outlined the status of the hospital with respect to the registration under the Federal Narcotic Law and answered a number of questions which hospital pharmacists must know in regard to controlling narcotics in the hospital. He cited examples of serious irregularity in the handling of hospital narcotics and further outlined the necessary records in order that such drugs may be controlled. In conclusion, Mr. Tennyson stressed the importance of properly safeguarding the stock of narcotic drugs at all times, bearing in mind the risk increases as the size of the stock increases. He further stated that "the principal stock should be kept in an adequate safe or vault and the pharmacist, as the responsible supply officer, should alone have access to this stock. The pharmacist should be vigilant in enforcing this principle. The floor stock should be kept in a securely locked cabinet to which the head nurse only has access and no excessive supply should be kept in the floor cabinet; as an additional safeguard it might be well to have a pharmacist at irregular intervals make a joint check with the head nurse, of the floor cabinet supplies to see that there is no discrepancy between floor stock and dispensing records and possibly to detect any substitution."

Included also in the series of lectures on hospital administration were lectures on pharmacy reports by Mr. Albert Lauve and on purchasing by Mr. John Zugich.

Highlighting the lectures on manufacturing in the hospital pharmacy was the discussion on the economics of manufacturing in a 100 bed institution by Mr. J. Robert Cathcart, chief pharmacist at Chester County Hospital, West Chester, Pa. He presented examples of pharmaceutical preparations which can be prepared economically in the hospital pharmacy giving actual figures showing the saving which a hospital pharmacist may make for his hospital. A lecture on the preparation of allergenic extracts was presented by Mr. Don Francke along with an actual demonstration of the procedure used in preparing extracts, both for diagnosis and therapeutic treatment of allergies was given. Other lectures on the manufacture of non-sterile preparations in the pharmacy were given by Dr. W. Arthur Purdum, Johns Hopkins University Hospital Pharmacy, who spoke on the manufacturing of ointments, emulsions and suspensions. Dr. Purdum's lecture was supplemented with actual demonstration of equipment and formulas which can be used in the hospital pharmacy. A lecture on ophthalmic medications along with specific formulas and directions for preparation was also given by Dr. Purdum. Concluding the discussions on manufacturing procedures was a lecture, along with the presentation of formulas, for the manufacture of tablets in the hospital pharmacy by Mr. Albert Lauve.

Devoting more than a day to lectures and discussions on the preparation of parenteral medications, the institute was fortunate to have Dr. Carl W. Walter, Director, Laboratory for Surgical Research and Associate in Surgery at Harvard Medical School. Dr. Walter presented an informative discussion on the manufacture of parenteral solutions including pyrogens, distilled water, sterilization techniques, bacterial filtration, aseptic techniques, and procedure for typical preparations which may be prepared in the hospital pharmacy. Continuing the lectures on parenteral solution manufacture, Mrs. Martha Coffield of St. Joseph's Infirmary,

VETERANS ADMINISTRATION PHARMACISTS AT THE INSTITUTE

Front Row left to right: Schwartz, Monteith, Hudson, Duryee
Back Row left to right: Geiger, Anderson, Erdeljon, Spence
Millis, Trygstad, Haupt, Stepanian, Kawasnicki

Atlanta, Georgia, substituted for Mr. Leo Godley, presenting a lecture on planning and equipping a sterile solutions room or laboratory. Other lectures on this subject were presented by Mr. J. Robert Cathcart and Mr. Albert Lauve on the manufacture and packaging of parenteral fluids.

Since hospital pharmacy has come to play an important part in providing medical care in the government services the Institute was fortunate to have representatives from all four branches of the government services to present lectures on the future development of hospital pharmacy in each branch. These included discussions by E. Burns Geiger, Chief of the Pharmacy Division of the Veterans Administration; George Archambault, Chief of the Pharmacy Section, Hospital Division of the U. S. Public Health Service; Colonel Othmar F. Goriup, Chief, U. S. Medical Service Corps of the Department of the Army and Commander W. Paul Briggs, Medical Service Corps of the Department of the Navy.

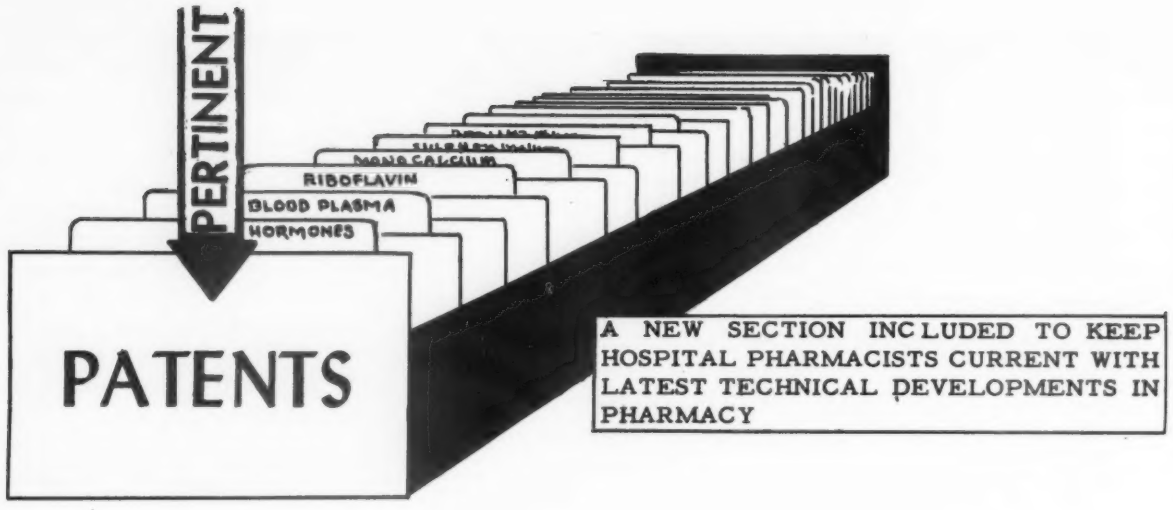
Each of these men assured hospital pharmacists that there is an opportunity for pharmacists interested in any one of the various branches of government services. Hospital pharmacists were also assured that government pharmacy will continue to maintain the high standards in providing adequate pharmacy service in their hospitals.

Concluding the five day session Dr. Austin Smith of the Council on Pharmacy and Chemistry of the American Medical Association presented a discussion on new medications. Although Dr. Harry Gold, Associate Professor of Pharmacology at Cornell University Medical School, had originally been scheduled to lecture on therapeutic trends, he was not able to be present because of illness. However, Dr. Austin Smith presented a timely lecture on recent drugs accepted by the Council on Pharmacy and Chemistry of the A.M.A.

Closing the week of study was the final dinner on Friday night, at which time Mr. John Zugich presided. Those members of the Institute who had attended all sessions were awarded a certificate by the American Hospital Association.

Most of the faculty members were present throughout the week and consequently, members of the institute had an opportunity to talk with these individuals on matters of particular interest to them. Among the visitors at the Institute were Dr. E. Fullerton Cook, Chairman of the U. S. P. Revision Committee; Mr. John Debus, Secretary of the New Jersey Pharmaceutical Association; Mr. Irving Rubin, Associate Editor of the American Druggist; and Sister Mary Etheldreda, Treasurer of the American Society of Hospital Pharmacists.

Responsible for the photographs taken at the Institute was Mr. Eddie Wolfe, Chief Pharmacist at Mt. Alto Hospital. Mr. Eddie Wolfe is also editor of the VA Section on hospital pharmacy and consequently has made regular contributions to THE BULLETIN.



EMULSIONS IN WATER OF FAT-SOLUBLE VITAMINS

N. V. Phillips' Gloeilampenfabrieken. (E. H. Reerink and J. van der Vliet, inventors). Dutch patent 59,178. As an emulsifier a sterol is used which has one or more hydrophilic groups, obtained by esterifying or etherifying the OH-group. To test the emulsifier for an emulsion to be mixed with milk, dissolve 10 mg. in 1 cc. water with a few drops alcohol then add 0.3 cc. of a freshly made, homogenized, and centrifugated solution of 10 grams skim milk powder in 25 cc. distilled water, and judge the liquid after 2 hours. No flocculation should occur. Chemical Abstracts, 41:5692, September 10, (1947).

MULTIVITAMIN COMPOSITIONS

Loran O. Buxton and Sol Tobias (to Nopco Chemical Company). U. S. Patent 2,421,598. This invention provides improved, stable, water-dispersible multivitamin compositions containing both fat-soluble and water-soluble vitamins, and an improved process for preparing such compositions. The process consists of incorporating the vitamins into a solvent comprising ethyl alcohol and a blending solvent selected from the group consisting of glycerol and (or) lactic acid. Such multivitamin compositions can be easily dispersed in aqueous media so as to produce relatively clear dispersions of high vitamin potencies without any separation of the oily fat-soluble vitamin concentrates. Glycerol and (or) lactic acid make the composition more viscous than a solution of the vitamin in ethyl alcohol alone, making vitamin A and C more stable. Also, a higher potency in vitamin C and riboflavin can be obtained. By the process, completely water-dispersible products can be prepared which contain substantially all of the vitamins in the proper ratio for supplying the body's needs and in such a concentration that a very small quantity will supply the average daily requirement. The fat-soluble vitamin concentrates which are used in preparing the multivitamin compositions may be concentrates of vitamins A, D, or E; but preferred are highly potent concentrates, example given, vitamin A concentrates containing about 300,000-2,500,000 (preferable about 750,000-2,500,000) A units per gram, and vitamin D concentrates containing about 100,000-2,000,000 (preferably about 500,000-2,000,000) D units per gram. Mixed A and D concentrates containing about 800,000-1,800,000 A units and about 100,000-1,400,000 D units per gram may be utilized. The concentrates may be derived from the naturally occurring vitamins or from their synthetic forms. The water-soluble vitamins which are employed in this new process may be of the vitamin B complex, either as natural concentrates or synthetic material, and vitamin C, either natural or synthetic. Chemical Abstracts, 41:5692, September 10, (1947).

INTERNAL SURGICAL DRESSING

Claude W. Bice and Majel M. MacMasters (to the United States of America; as represented by the Secretary of Agriculture). U. S. patent 2,423,475. An aqueous 2-5% suspension of starch is pasted by heating to 90° or by autoclaving at 15 pounds per square inch for 15 to 20 minutes, then rapidly cooled and slowly frozen at 0.1° to 1.0°. Thawing produces a soft pliable and highly absorbent sponge. Such sponges, when implanted

in living animal bodies, dissolve slowly in the body fluids over a period of several days and the dissolved material is absorbed by the tissues without harmful results. Portions of dried sponge have been found to disperse in 4-7 hours when held at 37° in beef-blood serum buffered at pH 7.6-7.0, and in about 6 days when moistened with sterile water and implanted in the omentum of a cat. They may be stored in 30-100% ethyl alcohol (preferably 70%) and kept antiseptic, or dried below 30°. When dried, they become quite brittle, but will not break if carefully packed, and if carefully air dried while maintaining their form, they readily return to their original state when remoistened. Intrablood medicaments, such as penicillin, gramicidin, or sulfapyridine, can be introduced into these sponges in solution which will be held in the pores of the sponge, and in addition considerable of the drug may be absorbed from the solution onto the surfaces of the fibers and films composing the sponge. Chemical Abstracts, 41:6372, October 10, (1947).

GELATIN VEHICLE

Harold A. Abramson. U. S. patent 2,415,719. At least 5% of urea is added to epinephrine or other pharmaceutical compositions particularly adapted for slowly-acting subcutaneous injections, comprising a drug carried in an aqueous solution of gelatin. Thus a specific preparation successfully tested clinically consisted of a 1:500 epinephrine salt in a vehicle containing 8.5% U.S.P. gelatin and 15% urea. Urea has the unusual property of imparting to the gelatin vehicle less plasticity at room temperature and more plasticity at body temperatures. Chemical Abstracts, 41:2863, May 10, (1947).

MEDICATED TOBACCO

Sarah S. Frederickson. U. S. patent 2,418,296. A medicated smoking tobacco mixture and cigaret useful in the treatment of symptoms of hay fever is prepared from a mixture of untreated tobacco and a small per cent of tobacco flakes coated with an animal fat having a higher melting point than body temperature. Thus tobacco flakes are coated with melted and cooled mutton tallow or lanolin by kneading together in such a way that the tobacco is coated without absorption. The treated tobacco is then mixed with 3 or 4 parts of untreated tobacco and when smoked vaporizes in such a way to form a protective coating for the mucous membrane lining of the respiratory passages. Chemical Abstracts, 41:3930, June 20, (1947).

ASCORBIC ACID

Nederlandsche Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (P. J. van der Laan, inventor). Dutch patent 59,340 Esters of monomethylene ethers of 1-2-ketogulonic acid may be converted into ascorbic acid by heating with water above 120-140°; 87.5 grams ethyl ester of monacetoneketogulonic acid and 1 liter of water were heated in an autoclave at 135-140° for 100 minutes to give 59% yield. Chemical Abstracts, 41:5692, September 10, (1947).

A THERAPEUTIC COMPOSITION FOR ASTHMA

Harold A. Abramson. U. S. 2,414,918. A therapeutic composition for the nebulization therapy of asthma, consisting of an adrenaline salt 1, glycerol 10-50, sodium bisulfite 0.1, chloretone 0.4 gram, and water to make 100 cc. Chemical Abstracts, 41:2539, April 20, (1947).

APPARATUS FOR DRYING DRUGS

Wellcome Foundation Limited. British patent 581,040. Finely divided drugs may be dried conveniently in a glass rotary drier employing radiant heat from infrared lamps. Chemical Abstracts, 41:2211, April 10, (1947).

RUTIN FROM BUCKWHEAT

Edward L. Griffin, Jr. (to United States of America, as represented by the Secretary of Agriculture. U. S. patent 2,425,094. Leaf meal from dried buckwheat plants is extracted with 65% alcohol at room temperature. The alcohol is removed and after crystallization for 48 hours the crude rutin is filtered off. Extraction of fatty matter with benzene, then purification by solution in alcohol and then 3 times in water yields a product suitably pure for pharmaceutical uses. Chemical Abstracts, 41:6676, October 20, (1947).

QUERIES

EDITED BY EVLYN GRAY SCOTT, CHIEF PHARMACIST,
ST. LUKE'S HOSPITAL, CLEVELAND

PENICILLIN DENTAL CONES

H. F. of Philadelphia wishes the name of a manufacturer of penicillin dental cones U.S.P. XIII.

Novocol Chemical Manufacturing Co., 2911 Atlantic Ave., Brooklyn 7, New York is said to manufacture cones containing 2000 units of penicillin.

ADDRESS OF PRECISION SCIENTIFIC COMPANY

G. S. of Hamilton, Canada is interested in obtaining a hot air oven and wants the address of the Precision Scientific Company.

The address for the Precision Scientific Company is 1750 N. Springfield Ave., Chicago, Ill.

GLUTAMIC ACID USED TO TREAT MENTALLY RETARDED SUBJECTS

G. S. of Hamilton, Canada wants information as to which form of Glutamic Acid is used in the clinical investigations with mentally retarded subjects.

According to an article which appeared in Arch. Neurol. Psychiat. 51, 993 (1944) there is evidence that a therapeutic effect is associated with natural 1 (+) glutamic acid. It is noted, however, that other forms of glutamic acid have been used in early experiments. Much of the original work on the use of glutamic acid in the treatment of mentally retarded patients was carried on at the Department of Neurology and Biochemistry, Columbia University College of Physicians and Surgeons. We suggest that you contact H. Waelsch, M.D.,. Ph.D. at Columbia University, New York City for information as to which form of glutamic acid is being used therapeutically. A summary of the work which has been done on this problem, including references, appears in Nutrition Reviews 5, 6 (June 1947). The 1 (+) glutamic acid is available from Merck & Co., Rahway, N. J.

D.D.T. FOR USE ON HUMANS

R. E. of Rochester, New York says he is unable to locate a supply of D.D.T. that may be used on humans.

Apparently the companies which were contacted must be handling D.D.T. that has been dissolved in various liquids that make it toxic for human use, but if the powder form is purchased you may then make your own dusting powder (5 or 10%) by mixing with talc. D.D.T. (Dichloro-diphenyl-trichloroethane) powder may be obtained from S. B. Penick & Co., 50 Church St., New York 7, N. Y.

PRESERVATIVE FOR ALBRIGHT'S SOLUTION

H. M. of Williamsville, New York has found that with the following formulae used for a bladder irrigation, a fungus-like growth develops within 48 hours. A harmless preservative is requested.

	I	II
Citric Acid	129.0 Gms	123.0 Gms
Magnesium Oxide light	14.6 Gms	15.2 Gms
Sodium Carbonate	33.4 Gms	17.6 Gms
Aqua dist qs ad	3800.0 cc	3800.0 cc
pH	4.8	pH 4.0

Benzalkonium Chloride (Zephiran) Conc. 12.8% - 0.75 cc may be added as a preservative. (See THE BULLETIN, - July - August 1947 issue - Page 165). This solution could be sterilized in gallon bottles in an autoclave if temperature is held between 115 - 121 degrees C. for thirty minutes. If sealed this sterile solution may be stored indefinitely. The pH does not change upon being sterilized.

The above formulae are stable. The first is commonly known as Solution M and the second as Suby's, Albright's or G Solution. The Citric Acid should be U.S.P., the Magnesium Oxide may be the heavy variety, and so less bulky to use, and the Sodium Carbonate should be anhydrous.

PLEXIGLAS SUPPOSITORY MOLD

P. K. of Rochester, Minn. wants to know where to purchase a plexiglas suppository mold.

John M. Maris Co., 2100 Arch Street, Philadelphia 3, Pa. has one with twelve cavities which sells for $10.40. The advantage of this mold is its transparency. A possible disadvantage is that the mold must not be subjected to a temperature exceeding 200 degrees F.

THE VETERANS ADMINISTRATION PHARMACIST

EDITED BY EDDIE WOLFE, CHIEF PHARMACIST, MT. ALTO VETERANS HOSPITAL
WASHINGTON, D.C.

VETERANS ADMINISTRATION HOSPITAL NORTH LITTLE ROCK, ARKANSAS PHARMACY SECTION

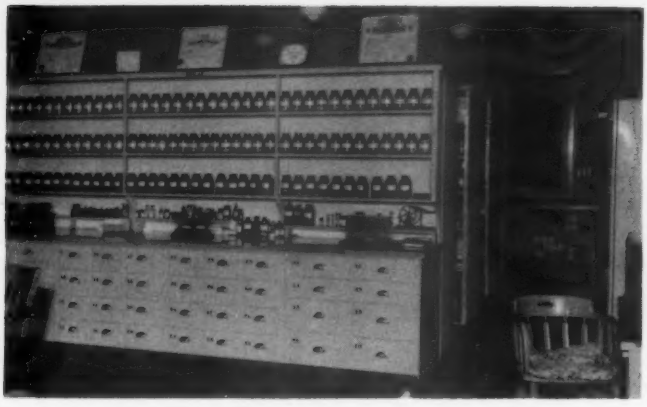
The pharmacy of the VA Hospital, North Little Rock, Arkansas, is a busy, efficient service unit which operates with the thought in mind that by giving good service, better medical care can thus be offered to our veterans. For proper orientation, it seems apropos to point out that this hospital has approximately 300 medical and surgical beds, 167 tuberculosis beds, and approximately 1500 neuropsychiatric beds. The total capacity of the hospital is 2095 beds. The hospital has on the average of 1800 patients at all times. The medical and surgical service is very active, as this hospital has been designated a center for neurosurgery, plastic surgery, and chest surgery. The medical service remains busy and the practice of medicine is of a high standard. The chiefs of these services work closely with the Therapeutic Drug Committee, and by virtue of our three-year approved, psychiatric residency, new drugs are studied carefully and critically.

The pharmacy is located in a separate building, adjacent to the Clinical Building. The walls and fixtures are decorated in a restful, cool, pastel green shade and are trimmed with a light gray color. The building is amply lighted with modern fluorescent fixtures. There are approximately 1200 square feet of shelving and storage space. There is adequate room for the pharmacist's desk, a large safe, a private toilet, and a utility closet. Each section and shelf is numbered, and the exact location of every item carried in stock is listed in a "locator" card file which is kept on the pharmacist's desk. This file is handy and is considered a necessity as the doctor in charge occassionally needs drugs after working hours. The marble topped prescription case is arranged to accommodate two pharmacists working independently of each other, and supplies adequately all the drug requirements to the various wards, surgeries and clinics. Provision is made to electrically heat all preparations requiring heat, and ample electric refrigerator space is furnished for drugs and biologicals requiring refrigeration. Adequate stock levels of all items used are maintained. Special formulas are prepared and kept available for immediate use by the medical staff. By keeping on hand sufficient preparations of articles routinely ordered, delivery can be made immediately, thereby saving the time of the medical staff.

A pharmaceutical library is kept up to date and such periodicals as the American Professional Pharmacist, Drug Topics, the Journals of the A.Ph.A., and others give adequate and up to date information. Further detailed information is available at the hospital medical library.

The pharmacy operates on a seven-day week and is open from 8:00 a.m. to 4:30 p.m. This schedule is arranged so that a registered pharmacist is on duty each day of the week. The Chief Pharmacist, Mr. S. K. Kepner, has had a wide and varied experience in all phases of pharmaceutical work, having worked in wholesale and retail stores, prescription laboratories and hospital pharmacies. He attended the University of Oklahoma School of Pharmacy, and has been a full time employee of the VA for ten years. Mr. Kepner has been a registered pharmacist for 33 years. He is a veteran of World War I, a member of the American Pharmaceutical Association, and American Society of Hospital Pharmacists. At this station, Mr. Kepner acts as secretary for the Therapeutic Drug Committee. The Assistant Pharmacist is Mr. Hoover W. Holman, who is a graduate of the University of Oklahoma School of Pharmacy. Mr. Holman is a veteran of World War II, is a registered pharmacist, and has had several years experience in retail and hospital pharmacies.

In the operation of the pharmacy, an air of efficiency and professional dignity is maintained. However, hospitality is the order of the day and all members of the medical staff feel free to visit the pharmacy and increase their knowledge relative to



Pharmacy Department, VA Hospital,
N. Little Rock, Ark.

preparation and use, and the discussion of problems concerning various drugs and therapies.

Again, it is emphasized that the pharmacy considers itself to be a service unit and maintains as its goal the proper and efficient drug service to the medical staff, with the ultimate goal in mind of the accurate and proper care of our veteran patients.

Mr. Kepner
Chief Pharmacist

VA Hospital, Dearborn, Michigan

The Dearborn Hospital is one of the larger VA institutions. Mr. A. W. Davidson is chief pharmacist.

VA NEWS

"Encouraging" progress, especially in the development of new methods of diagnosis, is revealed in first reports from doctors working with the Veterans Administration's radio-isotope research program.

Dr. George M. Lyon, Chief of VA's Radio-isotope Section, also revealed that leukemia patients are now being treated with radio-phosphorus in most of the seven VA hospitals having radio-isotope units and that another atomic pile byproduct, radio-iodine, is being employed to treat some thyroid diseases.

"It may be too much to expect this new form of treatment to prolong life or cure the leukemia patient," Dr. Lyon said, "but it certainly does reduce the suffering and makes their days more bearable."

Reports received to date on the use of radio-phosphorus in treating leukemia, a form of blood cancer, indicate that unpleasant reactions frequently produced in these patients by X-ray treatment do not occur, that symptoms resulting from the disease are more readily controlled and that the patient usually has a much shorter stay in the hospital.

It is expected that isotopes will continue to prove most valuable in the study of various internal diseases and that their use for treatment will be limited. Several of the nation's leading medical schools and research groups are conducting similar radio-isotope projects.

In this new research technique a radioactive substance is administered. Distribution of the radioelements in the body is then checked either by means of sensitive photographic films or with electrical impulse equipment, including the Geiger counter, the device used by engineers in atomic energy plants.

Radio-isotope units are located in VA hospitals at Los Angeles and Van Nuys, Calif., Framingham, Mass., New York City, Cleveland, Chicago, Minneapolis and Dallas. Five additional VA hospitals are scheduled to receive units within the next two years.

A total of 13,245 World War II veterans are training in pharmacy under the G.I. Bill, a Veterans Administration survey disclosed.

Of the total, 12,899 are enrolled in educational institutions and 346 are taking on-the-job training in pharmacies.

The VA survey lists occupational fields of some 2,000,000 veterans studying in schools and colleges, and 546,000 training on-the-job on December 1, 1947.

Veterans are eligible for education and training under the Servicemen's Readjustment Act (G.I. Bill) if they served in the armed forces between September 16, 1940, and July 25, 1947; had 90 days or more of service; and were released under conditions other then dishonorable.

ORGANIZATION NEWS

THE WISCONSIN SOCIETY OF HOSPITAL PHARMACISTS had its last meeting of the season at the Milwaukee County General Hospital, Friday, May 21.

The program consisted of a conducted tour through the General Hospital and the Hospital for the Mental Diseases, and a drive through the grounds of Muirdale Sanitarium. The program closed with a luncheon served at the General Hospital.

During the business session Mr. Wm. Benka, Chief Pharmacist of Milwaukee County Hospital was elected president to succeed Mr. Leonard Trousman of Mt. Sinai Hospital. Sister M. Agnese of St. Joseph's Hospital was named vice-president to succeed Sister M. Blanche of Sacred Heart Sanitarium, and Mrs. Doris Shimon of Evangelical Deaconess Hospital was elected secretary-treasurer to succeed Sister M. Regina of St. Michaels Hospital. Mr. Wm. Benka presented Mr. Leonard Trousman, retiring president, with a gift of appreciation from the group.

THE MASSACHUSETTS SOCIETY OF HOSPITAL PHARMACISTS met on March 19 at Burbank Hospital in Fitchburg, Massachusetts. After a visit to the Pharmacy Department, the members adjourned to the Doctors' Library where they were greeted by Mr. Richard Bullock, Directing Trustee of the Hospital. "Narcotic Control in the Hospital" was the subject of the guest speaker, Mr. P. A. Williams, District Supervisor of the Boston Branch of the Federal Narcotics Bureau.

THE CLEVELAND SOCIETY OF HOSPITAL PHARMACISTS held their annual dinner meeting at the Highland Steak House May 26, with 34 members and guests present. During the business meeting, it was suggested that a proposed trip to Parke-Davis & Co. in Detroit be investigated. Since this was the last meeting of the year, the following officers were elected for the ensuing year: Mr. William O. Hays, President; Mr. Gabriel H. Brown, Vice-President; Mr. Thomas Edward Sisk, Secretary; Miss Bremner, Corresponding Secretary; and Mr. Robert Stockhaus, Treasurer.

THE MICHIGAN SOCIETY OF HOSPITAL PHARMACISTS held a meeting at Evangelical Deaconess Hospital in Detroit on May 20. Dr. J. Marion Bryant was a guest speaker of the evening. He discussed, "The Importance of Sodium Restriction as a Therapeutic Measure in Hypertension and Heart Disease."

During a business meeting, the Treasurer reported a balance on hand as of May 1, 1948 of $326.89.

Mr. Tennant of Henry Ford Hospital reported that the Boards of Medicine and Dentistry are appointed by the Governor on his own judgment. He further stated that the State Association, such as the Bar Association, recommends certain members to the Bar on recommendations of the State Supreme Court. Consequently, it was recommended that the Michigan Society of Hospital Pharmacists plan to work toward placing a hospital pharmacist on the State Board of Pharmacy.

Chairman of the Membership Committee, Belle Moskowitz, reported that 182 people are on the mailing list, 46 of which are hospital pharmacists, 60 are Associate members, and the remainder are Hospital Superintendents.

Plans for the June meeting include a tour of the Parke-Davis Plant and dinner at the Book Cadillac in Detroit.

Election of Officers for the coming year resulted as follows: Lawrence T. Lyon, Hurley Hospital, Flint, Michigan, President; Belle Moskowitz, Children's Hospital, Detroit, Vice-President; Virginia Kishon, Art Centre Hospital, Detroit, Secretary; and Albert L. Picchioni, University Hospital, Ann Arbor, Treasurer.

THE AKRON AREA SOCIETY OF HOSPITAL PHARMACISTS held a meeting at Aultman Hospital in Canton, Ohio on May 12. Election of officers for the coming year followed the formal organization of the Akron Society. Officers for 1948-1949 are as follows: Mrs. Mary Morgan of Children's Hospital, Akron, President; Miss Jeanne Tarney, Aultman Hospital, Canton, Secretary; and Mr. William McElroy, Peoples Hospital, Akron, Treasurer.

The Constitution and By-Laws of the Society were approved and unanimously accepted by the group. In compliance with affiliation with the National Society, a copy of the Constitution and By-Laws, along with a list of officers and members of the local group, have been forwarded to the National Secretary.

The next meeting will be held in September at Peoples Hospital in Akron. Meetings are scheduled for the second Tuesday of each month.

The Akron Society of Hospital Pharmacists has been approved as an affiliated group of the American Society of Hospital Pharmacists according to Mr. Leo Godley, Secretary of the A.S.H.P. This group has been organized for a number of years and has held meetings regularly. Hospital pharmacists in the surrounding areas, including Canton, Ohio, participate in these programs.

THE CONNECTICUT ASSOCIATION OF HOSPITAL PHARMACISTS plan to organize a group and affiliate with the National Society in the near future. It is believed that there are more than 50 hospital pharmacists in Connecticut. Hospital pharmacists instrumental in organizing a local group in Connecticut include Mr. Schwartz of Stamford Hospital, Mr. Don Ranelli of New Haven Hospital and Mr. John J. Zugich of New Haven Hospital.

POSITIONS in hospital pharmacy

INDIANA...Wanted - Registered Pharmacist or Apprentice for Assistant Pharmacist in a 220-bed hospital in South Bend, Indiana. 44 hour week, 2 week vacation with pay after first year, and 2 weeks' sick leave with pay. Apply in person or write care of Richard R. Hocking, Administrator, Memorial Hospital, South Bend, Ind.

OHIO. . .Opening for assistant pharmacist in a 300 bed hospital, 44 hour week, 8:30 to 5:00. Work consists of filling regular stock supplies and prescriptions, and manufacturing. Woman pharmacist preferred. Write to Sister M. Baptista, Personnel Director, St. Elizabeth Hospital, Youngstown, Ohio.

SOUTH DAKOTA...Pharmacist Wanted - 204-bed general hospital, 8 hour day, one day off each week. Write Superintendent, McKennan Hospital, Sioux Falls, South Dakota.

MICHIGAN. . .Several openings are available for a two year program of graduate study and internship in hospital pharmacy leading to a Master of Science degree in pharmacy and a Certificate of Hospital Pharmacy Internship at the University of Michigan, College of Pharmacy and the Department of Pharmacy of the University Hospital. For details of the program see this publication, May-June 1948, page 139. For additional information write to Professor Charles H. Stocking, Acting Director, College of Pharmacy, University of Michigan, Ann Arbor. There are also staff positions open for male pharmacists at the University Hospital Pharmacy. For additional information write to Don E. Francke, Chief Pharmacist.

WASHINGTON...Female Pharmacists - Single women between 21 and 40. Experienced, registered pharmacists, having a degree from an accredited school of pharmacy preferred. Applications from women who have a degree and who are presently working toward registration under direction of a qualified pharmacist will also be considered. Salaries offered will be in proportion to qualifications and experience of applicant. Address letters to Employment Office, General Electric Company, Hanford Works, Richland, Washington.

POSITION WANTED

MISS LORENE J. COLE, 323 State Street, Albany, New York, is interested in a position in New York State outside of New York City. Miss Cole received her B.S. degree in Pharmacy in 1946 and has a New York State license.

MR. EUGENE S. WEAVER, who received his Bachelor of Science degree in pharmacy at Purdue University School of Pharmacy, Lafayette, Indiana, in January 1944 desires a position as chief pharmacist or assistant chief pharmacist in a hospital or medical center of at least 400 beds. Mr. Weaver has 3 years retail experience and has completed a 22 month internship in Hospital Pharmacy at University Hospital Pharmacy, Ann Arbor, Mich.

NEWS ITEMS

1948 ANNUAL MEETING IN SAN FRANCISCO

Members of the American Society of Hospital Pharmacists attending the 1948 convention of the American Pharmaceutical Association will meet on Monday and Tuesday, August 9 and 10. Mr. Julian M. Wells, Chief Pharmacist at the University Hospital in San Francisco is serving as Chairman of the Program Committee and has announced the following papers for presentation at the A.S.H.P. meetings:

"Evolution of Intravenous Medication"
Dr. Elizabeth H. Newkom, M.D., Director of Clinical Research,
Cutter Laboratories, Berkeley, California

"Public Relation Programs by the Hospital Phamacist"
Sister Mary Junilla Haskell, O.S.F., Ph. G.,
Chief Pharmacist, Queen of Angels Hospital,
Los Angeles, California

"The Hospital Pharmacy Course"
Charles G. Towne, Ph. G., B. S., Chief Pharmacist
VA Regional Office, Los Angeles, California

"Colonel Othmar F. Goriup"
Chief, Medical Service Corps,
Department of the Army, Washington, D. C.

"The Practical Application of PH and Osmotic Pressure in Ophthalmic and Nasal Solutions"
Jerome M. Yalon, B. S.,
Assistant Chief Pharmacist, U. C. Hospital,
San Francisco

Plans are also going forward to hold the annual breakfast for members of the American Society of Hospital Pharmacists on Tuesday morning, and a tour of Hospital pharmacies in the San Francisco area is being planned for Monday afternoon.

Monday and Tuesday afternoons will be devoted to presentation of the papers and a business meeting.

New Officers of the Society to be installed at the San Francisco meeting include President W. Arthur Purdum of Johns Hopkins Hospital in Baltimore; Vice President Geraldine Stockert of Monmouth Memorial Hospital in Long Branch, New Jersey; Secretary J. R. Cathcart of Chester County Hospital in West Chester, Pennsylvania; and Treasurer Sister Jeanne Marie of St. Elizabeth's Hospital in Youngstown, Ohio

HOSPITAL PHARMACY IS OFFERED AT HOWARD COLLEGE

Hospital Pharmacy, a new course designed to relieve the present shortage of hospital pharmacists in this section of the country will be inaugurated at Howard College next quarter according to Dr. C. Lee Huyck, professor of pharmacy.

The course was planned by two pharmacists, Dr. D. O. McClusky, Jr., administrator of Druid City Hospital in Tuscaloosa, and Mr. Joe Vance, assistant superintendent at Birmingham's South Highlands Infirmary. Mr. Vance teaches the three lecture per week course and a series of lectures by authorities are offered. Last quarter specialists in the field of drugs, the laboratory, parenteral therapy, purchasing and nursing were presented.

Because many pharmacists who enter hospitals have as their ultimate goal an administrative hospital position, the organization, functions and management of the hospital are emphasized and considered in detail.

The course was further described in the last issue of Southern Hospitals by Dr. C. Lee Huyck as covering the following topics: History and Development of Hospitals, Types of Hospitals, Types of Staff, Organization and Management, Hospital Departments and their Functions, Hospital Publications, Ethical Relations of the Hospital, Hospital Standards, Materials and Appliances, Sterilizations and Aseptic Technique, Hospital Terminology, Surgical and Nursing Supplies, The Medical Staff, The Functions of the Hospital and Specialized Services.

ACCEPTS POSITION IN WASHINGTON

Katie Moy Lim has accepted the position as Assistant Chief Pharmacist at Mt. Alto Veterans' Hospital in Washington, D. C.

Mrs. Lim was formerly chief pharmacist at Alexander Blain Hospital in Detroit and was active in the Michigan Chapter of the A.S.H.P.

NEW MEMBERS

CALIFORNIA

Sophie Feider
1830-1/4 Lucile Ave.
Los Angeles

Alvah G. Hall
8285 Sunset Canyon Road
Burbank

Roland H. Rosauer
810 South Spring
Los Angeles

Henry Louis Verhulst
311 Federal Building
San Pedro

CONNECTICUT

Edna Geseneiser
86 Lounsbury Ave.
Waterbury

ILLINOIS

William Orle Knight
743 East 104 Place
Chicago

Sister Anne Gallagher
499 Winneconna Park
Chicago

INDIANA

Donald Reade Ganong
505 Evergreen Street
West Lafayette

LOUISIANA

Rachel Baricenis
Eye, Ear, Nose & Throat Hospital
New Orleans

Gracie A. Barr
848 Second Street
New Orleans

Walter C. Dinwiddie
4407 Fontainbleau Drive
New Orleans

Pauline Greenberg
5002 Prytania Street
New Orleans

Joseph Lucus
4115 State Street
New Orleans

Margaret Norris
3818 Palymyra Street
New Orleans

MASSACHUSETTS

Newell W. Tirrell
Maple Street
Warren

NEW JERSEY

Eva Weiss
66 Catalpa Ave.
Perth Amboy

If you are delinquent in payment of your dues—mail in your check at once.

OHIO

Bart F. Blosser
Physician's Professional Ser. Co.
Lima

C. Orville
6209 Lisbon
Cincinnati

Warren H. Schmidt
710-1/2 S. Metcalf Street
Lima

James M. Trotter
412 E. Mulberry Street
Lancaster

PENNSYLVANIA

John Forrest Kelly
516 Maryland Ave.
Erie

Maxim Samuel Wise
Jefferson Hospital
Philadelphia

TENNESSEE

Hilda Bain
St. Joseph Hospital
Memphis

VERMONT

M. Patricia Jackson

Burlington